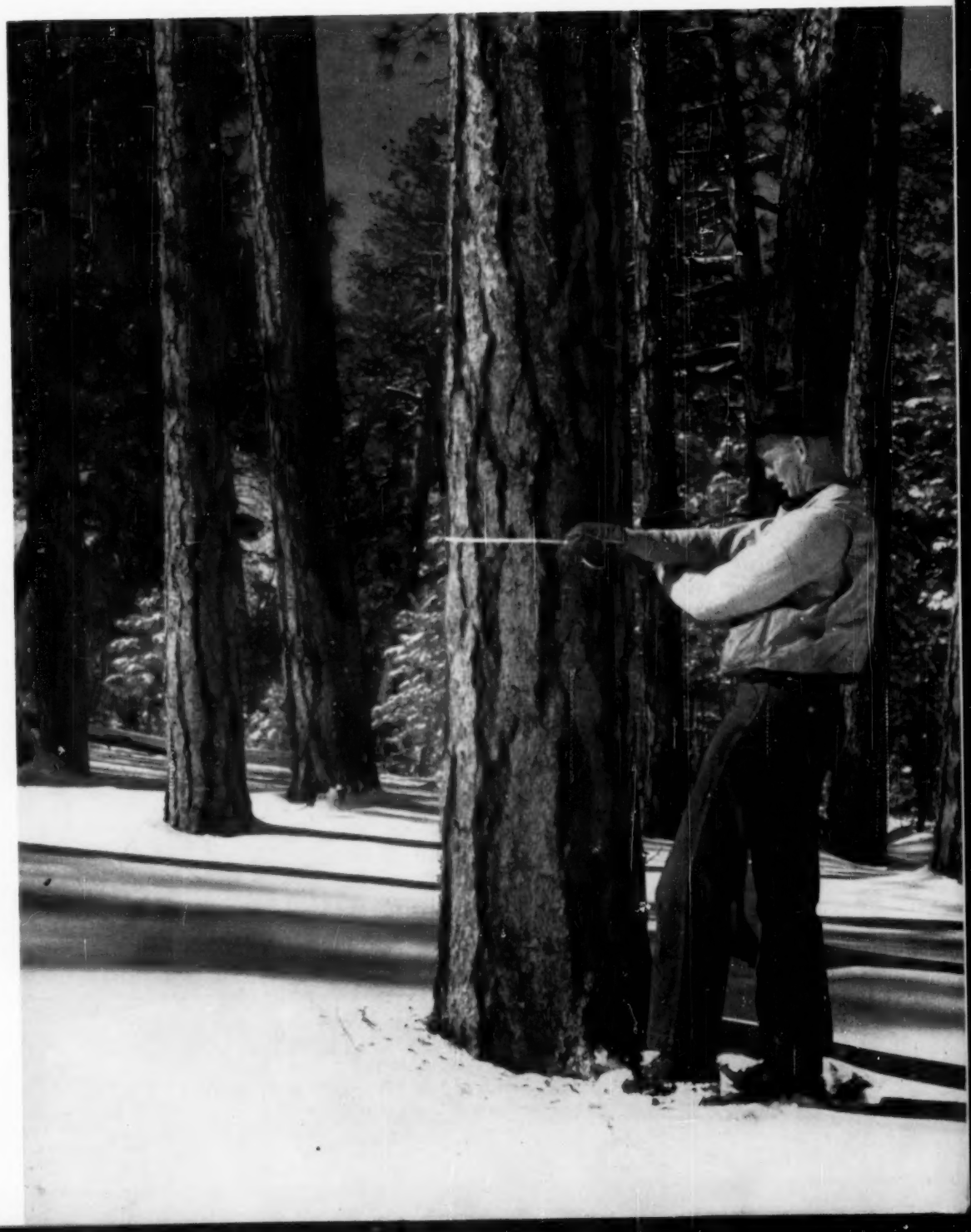
Journal of

FORESTRY

JANUARY 1957



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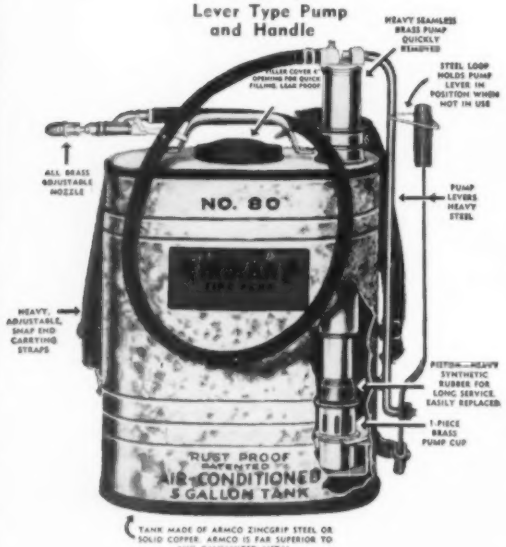
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CONTENTS

COVER: Cruising ponderosa pine on Navajo tribal lands, Arizona and New Mexico.
Photo courtesy Hammon, Jensen & Wallen.

The 56th Annual Meeting 3

Society of American Foresters Presents Four Awards at Annual Meeting 4

Nine Successive Thinnings in a Michigan White Pine Plantation
Stephen H. Spurr, Leigh J. Young, Burton V. Barnes, and *E. L. Hughes* 7

Watershed Management and Research on Salmon Streams of Southeast Alaska
Harold E. Anderson and *George A. James* 14

Seasonal Effectiveness of 2,4,5-T Basal Sprays for Eradicating Ribes in White Pine Blister Rust Control in Illinois
E. D. Bergeson and *Ralph W. Lorenz* 17

Progress of Heart Rot Following Fire in Bottomland Red Oaks
E. Richard Toole and *George M. Furnival* 20

Nutrient Responses of Ponderosa Pine Seedlings
J. Vlamis, H. H. Biswell, and *A. M. Schultz* 25

Soil Conservation Society of America
H. Wayne Pritchard 28

Notes 31

A Simple Test for Viability of Pine Pollen; Twelfth Congress of the International Union of Forest Research Organizations; Chemical Debarking of Southern Trees; Juvenile Development of a Cottonwood Stand in Central Oklahoma; Damage to Longleaf Pine Seedlings by Cotton Rats.

Reviews 36

Grasslands of the Great Plains: Their Nature and Use; The Handbook of Wilderness Travel; Statistical Methods; Soil Conservation; Publications of Interest.

Current Literature 39

Society Affairs 40

Forestry News 76

Index to Advertisers 86

Consulting Foresters Directory 87

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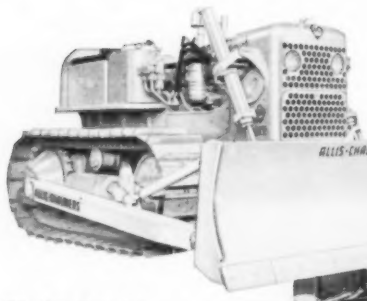

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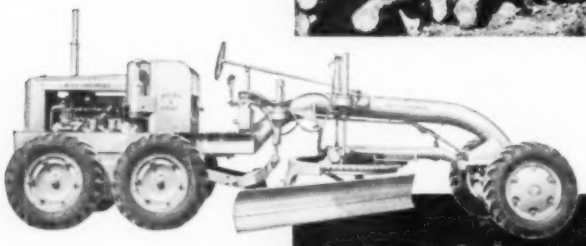

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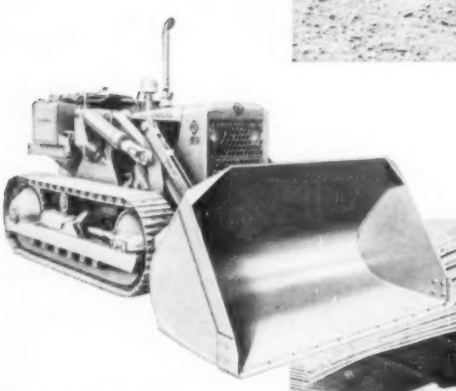

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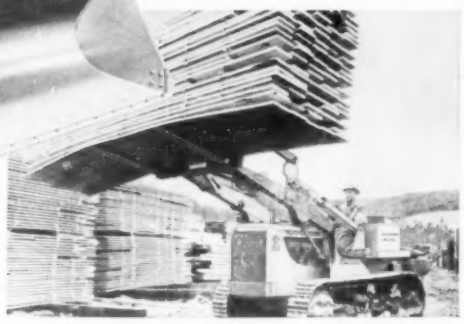

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The 56th Annual Meeting

MEMPHIS, Tennessee, "Hardwood Capital of the World," was the scene of the 56th annual meeting of the Society of American Foresters. Held October 15-17 in the Peabody Hotel, the meeting set a record for the number and proportion of privately employed foresters in attendance. Registration totaled 1,076 men, of whom 488 indicated connection with private industry. The registration of ladies, not included in the foregoing total, numbered 257. Members were present from 43 states and the District of Columbia, while 6 came from foreign countries.

The three days of sessions that comprised the meeting proper consisted of the general session, the Society Affairs session, and 11 technical Division meetings. This period was preceded by two days of related meetings and followed by two days of field trips.

On October 13 the Council of Forestry School Executives held an all day conference. On Sunday, the 14th, the Council was in business session and evening meetings were held by the Association of Consulting Foresters and the editorial board of the JOURNAL OF FORESTRY. Various gatherings of school alumni were held as opportunity permitted.

The General Session

The general session on the morning of October 15 launched the meeting on its theme, "Forestry Faces Forward." E. L. Demmon, past SAF president, presided and President DeWitt Nelson welcomed a capacity audience. Joseph E. McCaffrey, International Paper Co., Mobile, Ala., spoke on the subject "Making the Most of the Southern Forest: the Opportunities, the Tasks." S. M. Nickey, Jr., Nickey Brothers, Inc., Memphis, discussed "Special Horizons in Hardwood Forestry" and J. Alfred Hall, U. S. Forest Products Laboratory, Madison, Wisc., "Opportunities and Problems in Utilizing Wood Products of the Southern and Southcentral Forests."

Society Affairs

The annual business session of the Society was conducted by President Nelson. His report and all other reports given are published elsewhere in this issue, as well as a summary of the meeting of the Council and the Section delegates, which concluded the session.

Division Meetings

The 11 subject Divisions held technical sessions as follows. The Divisions of Education, Forest Recreation, Range Management, and Private Forestry met on the evening of October 15. On the following day an all day session was held by the Division of Silviculture, half-day sessions by the Divisions of Watershed Management, Economics and Policy, and Forest Products. The Division of Forest Management held an all day session on October 17 simultaneously with half-day meetings of the Divisions of Public Relations and Forest-Wildlife Management.

Social Events

Social events were well attended and much enjoyed by members and guests, starting with a tea on the afternoon of Sunday, October 14, sponsored by the Ladies Committee. On Tuesday night river boat transportation carried a thousand or more persons across the Mississippi where hush pupies and catfish were served on an Arkansas sandbar with a striking view of Memphis' skyline as a backdrop. This event was sponsored by 109 forest industry and equipment firms.

Almost a thousand members and guests attended Wednesday night's annual banquet. George A. Garratt served as toastmaster and the principal address was delivered by Hodding Carter, Greenvills, Miss., newspaper editor. Awards of the Sir William Schlich Memorial Medal and the Gifford Pinchot Medal were made to Samuel T. Dana and Inman F. Eldredge respectively. First awards by the Society for outstanding achievement in research were made to Philip C. Wakeley and Leo A. Isaac.

Special activities for the ladies were numerous and enjoyable.

Field Trips

Two days, October 18-19, were devoted to field trips following completion of the technical sessions. These included wood using industries, state and industrially owned forest properties, the Yazoo-Little Tallahatchie Flood Control Project, and the Vicksburg, Miss., Waterways Experiment Station of the Corps of Engineers, U. S. Army.

Appreciation

Meeting General Chairman Russell Stadelman, his staff of committee members and workers, and the many persons who contributed to make this annual meeting one of the Society's finest are highly commended by all in attendance.

Society of American Foresters Presents Four Awards at Annual Meeting

Presentation of the
Sir William Schlich
Memorial Medal
to Samuel Trask Dana
by DeWitt Nelson, President
Society of American Foresters
Memphis, Tennessee
October 17, 1956

Upon the death in 1925 of Sir William Schlich, late professor of forestry at Oxford University, English speaking foresters throughout the world contributed funds toward a Foundation to commemorate his distinguished services to forestry. Sir William had been inspector general of forests in India, and was author of a five-volume *Manual of Forestry*, one of the early authoritative works on the subject in English. During his lifetime he exerted a powerful influence on the advancement of forestry the world over.

Upon the establishment of the Sir William Schlich Memorial Foundation the trust fund was placed in the custody of the Empire Forestry Association in London. The annual proceeds from the fund are distributed in rotation among the various nations in the British Commonwealth and the United States.

In making the first award to the United States in 1932, the Empire Forestry Association designated the Society of American Foresters as custodian of the award. The Council of the Society used the proceeds to finance the design and casting of a medal, known as the Sir William Schlich Memorial Medal. It is awarded periodically by the Council in recognition of outstanding achievement in the advancement of forestry.

The first recipient of the Medal was President Franklin D. Roosevelt in 1935, for his good works in the conservation of natural resources.

The second award was made in 1940 to Gifford Pinchot, founder and first president of this Society.

Thereafter the Medal was awarded biennially to the following foresters:

Henry S. Graves in 1944.

William B. Greeley in 1946.

Herman H. Chapman in 1948.

Ralph S. Hosmer in 1950.

Ellwood Wilson (posthumously) in 1952.

Tom Gill in 1954.

It is now my pleasant duty to make the ninth award of the Schlich Medal. The recipient is a distinguished forester. His contributions to education and research, to the literature of forestry, and to our Society have been in the finest tradition of our profession. He is Samuel Trask Dana.

Born April 21, 1883 in Portland, Maine, Dr. Dana received the A.B. degree from Bowdoin College in 1904 and the M.F. degree from Yale in 1907, both *summa cum laude*. He is the recipient of honorary doctoral degrees from Syracuse University, Bowdin College, Yale University, and the University of Michigan.

Entering the U. S. Forest Service in 1907 he rose from forest assistant to assistant chief of the offices of silvics and forest investigations. During the First World War he was a captain in the Army.

Returning to the Forest Service, he was detailed to the economics staff, and in 1920 became assistant chief of research. Appointed forest commissioner of his native state of Maine in 1921, he served there until 1923 when he again returned to the Forest Service as director of the Northeastern Forest Experiment Station.

In 1927 he was appointed dean of the University of Michigan School of Forestry and Conservation (renamed in 1950 the School of Natural Resources). He served as dean until 1951 and retired with emeritus rank in 1953.

During his busy career, Dr. Dana found time to serve for five years as treasurer of the Society of American Foresters, as vice president for two years, and as president for two years. But these offices do not constitute his sole service to the Society. He was twice editor-in-chief of the JOURNAL OF FORESTRY for a total of six years.

Of his many contributions to forestry literature I should like to say more, if time permitted. However, I shall mention but one publication, his latest, *Forest and Range Policy; Its Development in the United States*, published this year. It is without question the definitive work on that subject.

On several occasions Dr. Dana has represented the federal government and this Society at international conferences. As one of the world's foremost forestry educators, he is particularly qualified to be accorded the international recognition implied in the Schlich Medal.

Dr. Dana, in behalf of the Society of American Foresters, it is with great pleasure that I present you with the Sir William Schlich Memorial Medal for distinguished service to forestry.

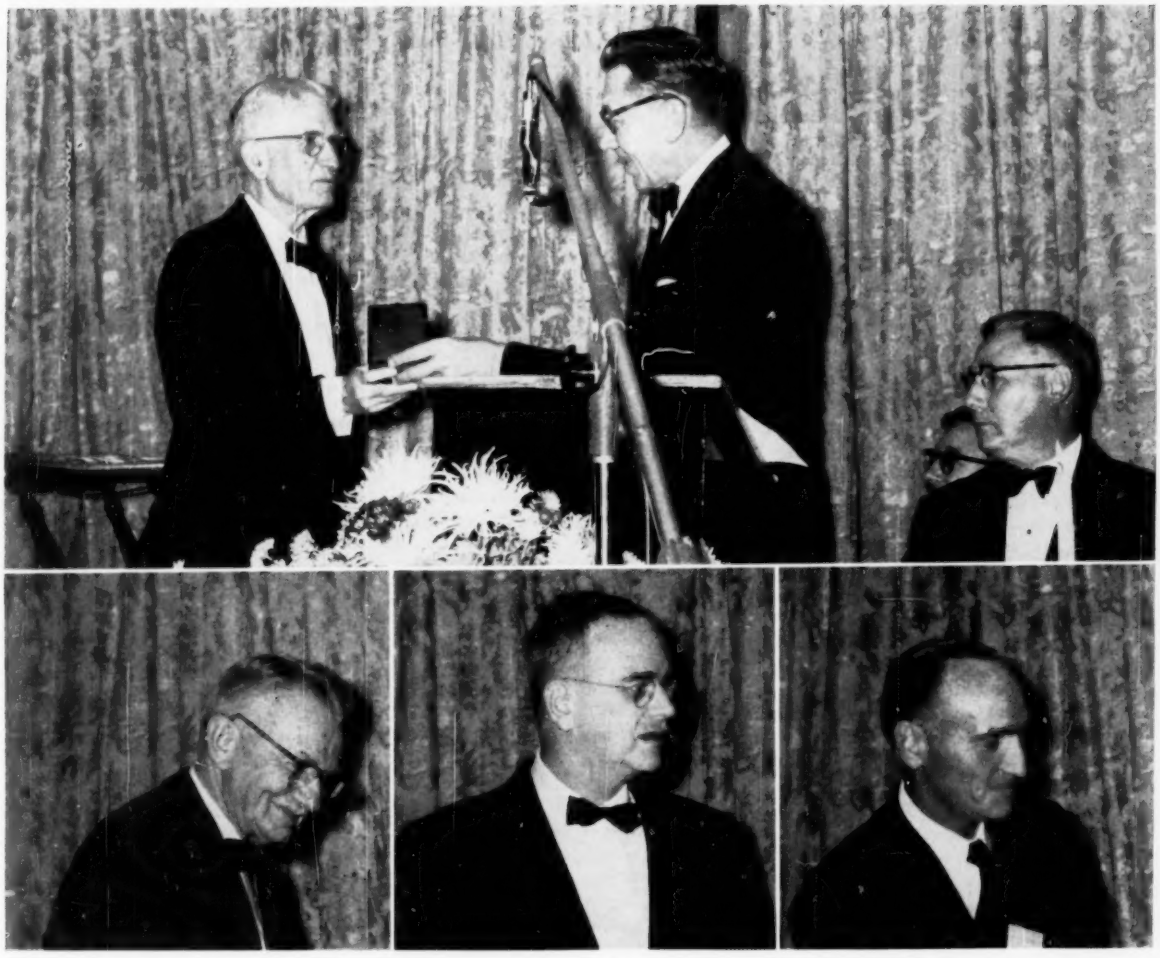
Presentation of the
Gifford Pinchot Medal
to Inman Fowler Eldredge
by DeWitt Nelson, President
Society of American Foresters
Memphis, Tennessee
October 17, 1956

An historical highlight of the golden anniversary meeting of the Society of American Foresters, held in December 1950 in Washington, D. C., was the first presentation of the Gifford Pinchot Medal. Commemorating the great American forester who was the first president of the Society, the chief of the U. S. Forest Service, and the foremost conservationist of his era, this medal is awarded periodically by the Society for outstanding service to forestry.

The Gifford Pinchot Medal has been awarded three times. First, to Henry S. Graves, also a past president of the Society, and dean of the Yale University School of Forestry. Second, to Raphael Zon, former editor of the JOURNAL OF FORESTRY, and a long time director of the Lake States Forest Experiment Station. And third, to William L. Hall, a charter member of the Society, an early technician of the Forest Service, and for these many years the manager of timberlands in Arkansas.

It is now my great honor as well as my keen pleasure to make the fourth presentation of the Medal. At this moment, I am reminded that exactly fifty years ago Mr. Pinchot was president of this Society. In the Forest Service of which he was then chief was a young forester who the year previously had entered the Service as a student assistant.

This once youthful student assistant, later to become an eminent forester in his own right, is a gentleman of the Southland as beloved for his warmth of personality as he is respected for his professional achievements. He is a former Councilman, Fellow of the



PRESENTATION OF AWARDS at the 56th annual meeting of the Society of American Foresters. Above (l. to r.) Samuel T. Dana receives the Sir William Schlich Medal from SAF President DeWitt Nelson while Executive Secretary Henry Clepper and Vice President George A. Garratt look on. Shown below (l. to r.) are Inman F. Eldredge as he receives the Gifford Pinchot Medal; Philip C. Wakeley, honored with an award for Achievement in Research; and Philip A. Briegleb receiving *in absentia* the award of Leo A. Isaac for Achievement in Research.

Society, and a loyal member for forty-five years. He is I. F. Eldredge.

Born March 24, 1883 in Camden, South Carolina, Mr. Eldredge attended Clemson College, then studied at the Biltmore Forest School, was graduated in 1904, and in the following year entered the Forest Service. After experience gained on national forests of the West, in 1909 he was appointed supervisor of newly created national forests in Florida, where, in addition to his successful management of the government timberlands, he developed methods of conservative turpentining now generally used throughout the naval stores region.

With the advent of the First World War, he entered on active duty, becoming captain of Company B in the 10th Engineers (the forestry regiment) with the American Expeditionary Forces in France. Returning to the Forest Service, he was made chief of timber management in the eastern region, and subsequently was assigned to the Washington, D. C. headquarters as forest inspector, specializing in management plans and timber sales.

In 1926 he left the Forest Service to purchase, and put under management for the Superior Pine Products Corporation, a tract of 200,000 acres in southeastern Georgia known as the Suwannee Forest. The object of the owners was to build up a property for the production of naval stores, lumber, and other products. During the six years that he operated the forest his management practices attracted foresters and forestry students from far and near who visited it seeking demonstrations of sound forestry.

Appointed in 1932 as regional director of the Forest Survey of the South, Mr. Eldredge returned to the Forest Service with headquarters at the Southern Forest Experiment Station in New Orleans. Under his supervision a survey organization of 125 technicians completed what was perhaps up to that time the greatest timber inventory ever made—120 million acres in eight states. As the one person with the most comprehensive knowledge of the timber resources of the South, he provided accurate information to the numerous pulp and paper companies that established mills in the region.

When in 1944 Mr. Eldredge retired from the Forest Service, he did not retire from forestry. Utilizing his

knowledge of southern wood resources, he established a consulting business to advise paper companies and other industrial forest owners. In recent years he has gradually withdrawn from consulting practice in order to devote more time to the serious vocation of fishing.

In his book, *The Training of a Forester,* Mr. Pinchot wrote, "Forestry is a profession in which you may fully realize the durable satisfactions of life, if you understand it, love it, pursue it with enthusiasm, and continue to study it throughout your career. It is very likely to make you happy, but it will never make you rich."

Forestry has made Mr. Eldredge both happy and rich—rich not in material wealth, perhaps—but rich in his thousands of friends, in the respect of his professional colleagues, in service to the nation.

If "G.P." were still president of the Society and with us tonight, I truly believe that he would have no greater satisfaction than in presenting the medal that bears his name to the student assistant who worked under him a half-century ago.

Cap Eldredge, accept with assurance of the affection and esteem of your fellow members of the Society of American Foresters this Gifford Pinchot medal for outstanding service to forestry.

Presentation of Awards to Leo Anthony Isaac and Philip Carman Wakeley for Achievement in Research

by DeWitt Nelson, President
Society of American Foresters
Memphis, Tennessee
October 17, 1956

In 1954 the Society of American Foresters was honored by receiving a grant of $10,000 from an anonymous donor for a most worthy object. The purpose was to finance awards to be made by the Council "in recognition of outstanding achievement in basic or applied research in any branch of the biological sciences, provided the research contributes, either directly or indirectly, to the advancement of forestry."

At a meeting of the Council held in February 1956, a committee was authorized to consider eligibles for future awards. At the same time the Council unanimously voted to make the first two awards in 1956 at the Society's annual meeting. Each award is in two parts—first, a plaque in the shape of the Society's official emblem and second, a check for $100.

In behalf of the entire forestry profession I hereby publicly express sincere appreciation to the anonymous donor whose financial grant has made it possible for the Society to recognize achievement in research in such an appropriate way.

The two foresters selected to receive the first awards have devoted their entire professional careers to research, for a combined total of 64 years. Each has been with his respective forest experiment station for 32 years.

The first recipient whose many contributions to the advancement of forestry we are happy to recognize is Philip C. Wakeley.

Born March 18, 1902 in Orange, New Jersey, Mr. Wakeley studied forestry at Cornell University, receiving the B.S degree in 1923 and the M.F. degree in 1925. Since he joined the Southern Forest Experiment Station in October 1924 he has been continuously employed there except for a brief detail to the Emergency Rubber Project during the Second World War. He is currently on the forest management research staff as specialist in forest genetics and planting.

Mr. Wakeley is the author of more than 70 scientific publications, chief among which is the monumental monograph *Planting the Southern Pines* published by the U. S. Department of Agriculture. This superceded his earlier Departmental technical bulletin on the same subject which served as the handbook for the huge tree planting program in the South during the Civilian Conservation Corps days. His early work on the significance of geographic sources of pine seed is currently being supplemented by a cooperative southwide pine seed source study, involving a large number of cooperators and outplantings. Mr. Wakeley is the coordinator of this region-wide activity.

A past chairman of the Society's Division of Silviculture, Mr. Wakeley is currently an associate editor of the JOURNAL OF FORESTRY for the fields of forest genetics and artificial regeneration.

Mr. Wakeley, in behalf of the Society and of the anonymous donor whose generosity made this award possible, I present you with this plaque and this check in recognition of your outstanding achievement in biological research leading to the advancement of forestry.

The second recipient of the award is Leo A. Isaac of the Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. Mr. Isaac is on a special assignment for the United Nations in Turkey; hence the award will be presented *in absentia.*

Born September 12, 1892 at Fond du Lac, Wisconsin, Mr. Isaac studied forestry at the University of Minnesota, receiving the B.S.F. degree in 1920. Appointed a junior forester with the U. S. Forest Service, he was engaged in national forest administration until 1924 when he was assigned to the Pacific Northwest Forest and Range Experiment Station as a silviculturist.

He has written numerous bulletins and scientific papers on the regeneration of Douglas-fir and the management of second growth. His solution to such problems as Douglas-fir seed vitality, seed dispersal, and mortality of seed trees has had great influence on silvicultural practices in the region.

Of his many publications two in particular are outstanding reference works on one of America's most valuable commercial species. They are *Factors Affecting the Establishment of Douglas-fir Seedlings,* published by the Forest Service; and *Reproductive Habits of Douglas-fir,* published by the Charles Lathrop Pack Forestry Foundation.

Among the public honors accorded him are the Agnes Healy Anderson forest research fellowship at the University of Washington in 1946, and the Outstanding Achievement Award from the University of Minnesota in 1951.

Mr. Isaac has asked that his friend P. A. Briegleb receive the Society's award for him.

Mr. Briegleb, in behalf of the Society and of the anonymous donor who established the award, I have the honor of presenting to you for transmittal to Leo Isaac this plaque and check in recognition of his outstanding achievement in biological research leading to the advancement of forestry.

Nine Successive Thinnings in a Michigan White Pine Plantation

Stephen H. Spurr, Leigh J. Young, Burton V. Barnes and E. L. Hughes[1]

School of Natural Resources, University of Michigan, Ann Arbor

TWO ADJACENT WHITE pine plantations in the Saginaw Forest in southeastern Michigan were given their eighth and ninth successive thinning respectively at 5-year intervals in 1955, 54 growing seasons from seed. Since individual tree data have been maintained throughout the period on thinned and unthinned sample plots in both plantations, a unique record has been accumulated. Although the permanent plots are small, the accuracy of the sample plot measurements coupled with the relative uniformity of the sites provide data on the cumulative effect of a large number of successive thinnings on the growth and development of a pure even-aged stand of timber. All the thinnings have been marked and supervised by Prof. L. J. Young, professor emeritus of silviculture at the University of Michigan (*12*). The senior author participated in the last thinning and has supervised the re-analysis of all the data covering the entire period by the two junior authors.

[1]Mr. Hughes is presently with the Forestry Branch, Canada Department of Northern Affairs and National Resources, and is stationed at Fredericton, New Brunswick.

History of Plantations

In the spring of 1904, eastern white pine (*Pinus strobus* L.) was planted on 1.4 acres of abandoned crop land in Saginaw Forest, an 80-acre farm recently purchased by the University of Michigan about 3 miles west of Ann Arbor. Two-year-old seedlings of an unknown seed source were used. The soil was ploughed and harrowed and the seedlings slit-planted with a spade. In lot 2B, Block I, the seedlings were planted approximately three feet apart. After initial mortality, 4800 seedlings per acre were counted in 1908. Lot 2C, Block I, was planted partly at a 4½ x 4½ spacing and partly at a 6- x 6-foot spacing. In 1908, 2,162 seedlings per acre were counted.

The site is a fairly level plain composed of a glacio-fluvial sands that had washed off an ice-block a few yards to the south, the kettle thus formed now being occupied by Third Sister Lake. The poorly stratified sand thus deposited grades into gravelly sand at a lower depth and is classified as a Fox sand varying to a Fox loamy sand.

Records of stand condition and insect attacks have been maintained since 1908. Some sawfly damage was recorded in the spring of 1912, damage by the pine-leaf Adelges was noted in 1919, 1930, and 1931. A number of dominant trees succumbed to drought in 1932. A fall hailstorm broke many leaders in 1916. Finally, winds blew down one tree and tipped two others on one sample plot in 1949, while one tree on another plot was hit by lightning in 1955.

The actual average height of the tree of mean d.b.h. 50 years from seed on all four plots was 64 feet. The comparable height of dominants and codominants was 66 feet. Variations in the choice of dominant and codominant trees for height measurements in the different years, however, make the

FIG. 1.—Lot 2B in 1920 before second thinning. Trees 19 years old from seed.

FIG. 2.—Lot 2B in 1935 before fifth thinning. Same view as Fig. 1. Unthinned plot to right of figure. Trees 34 years old from seed.

FIG. 3.—Lot 2C in 1956 after eighth thinning. Trees 54 years old from seed.

height of tree of mean basal area a more consistent and useful value.

Marking Practice

Part of the 3 x 3 plantation (2B) was given a first thinning or cleaning in 1915 in which the number of stems per acre were reduced from about 4,600 to 3,904. This stand thus has had nine successive treatments at 5-year intervals. Permanent sample plots of 0.236 and 0.173 acres were established in the thinned and unthinned portions respectively in 1916. The unthinned plot was split so that one-half of it lay north of the thinned plot and one-half of it lay to the south.

Both plantations were thinned in 1920 (Fig. 1). At this time, plots of 0.213 and 0.175 acres were established in the thinned and unthinned portions of lot 2C. All trees in all four plots were numbered, and records have been maintained by individual trees from that time on.

The primary purpose of the thinning plots was to provide concrete examples of the effects of two different thinning methods for use in teaching and demonstration. Lot 2B has been consistently thinned by the crown thinning method, while lot 2C has been consistently thinned by the low thinning method.

In lot 2B, the trees had differentiated into crown classes by the fall of 1915, 12 growing seasons after planting, because of the high initial density. At that time, most of the thrifty dominants were selected as crop trees, banded with white paint, and released by cutting their chief competitors. In subsequent thinnings, the number of crop trees (the original number established was not specified) has been reduced, but the present crop trees have been consistently favored by crown thinnings. At the same time, many of the suppressed and intermediate trees were marked for removal, so that more trees were marked for cutting than would normally be the case in crown thinnings of similar severity.

As it was planed to rely upon natural pruning for cleaning the boles of crop trees, the crown thinning procedure favoring more trees than were needed for crop trees had the advantage of releasing enough trees at an early stage to provide cleaners for the ultimate crop trees later on. Where cutting in the early thinnings is limited to trees that are adjacent to the final crop trees, large groups of trees are left untouched and hold each other back to such an extent that none of them are able to keep up sufficiently with the growth of the crop trees. Many of these latter trees become small-crowned with spindly boles and are easily bent or broken by ice and heavy snow as the example of white pine in an adjacent lot (3A) illustrates. In the later crown thinnings in Lot 2B (Fig. 2), an effort has been made to maintain a crown length—total height ratio of approximately 30 percent on the crop trees.

Low thinnings varying from Grades A to C have been followed in Lot 2C since 1920 (Fig. 3). Every five years, the crowns of the trees have been classified as dominant, codominant, intermediate, or suppressed in accordance with the usual definitions of these terms. All suppressed and the poorer intermediate trees have usually been removed. The application of this method has resulted in a more irregular distribution of the dominants and codominants and, in consequence, a less symmetrical crown development on these trees than on the crop trees in Lot 2B. In many cases, also, the crown length—total height ratio is less.

Analysis of Data

The diameter of each individual tree has been measured at breast height to the nearest tenth inch by calipers at 5-year intervals since 1920. From 1916 in 2B and 1920 in 2C to 1930, the heights of all trees were measured. In subsequent years, only a small sample of trees were measured for height.

Although considerable care has been expended in maintaining the individual tree records, discrepancies and omissions inevitably occurred. A major analytical effort was required to work up all the data on a uniform basis. First, the successive measurements for each tree were transferred to individual record cards (8) to permit corrections and estimations of occasional missing values. Second, a local volume table was constructed for each plot at each time of measurement. The basic volume table used was Table 119 in the Brown and Gevorkiantz collection (2), giving total cubic-foot volume inside bark. Up to and including the 1950 measurements, the local volume table

was constructed from conventional height-diameter curves (*6*). In 1955, however, a direct solution of the regression of volume over basal area was carried out following computational techniques outlined by Spurr (*10*). Volume-line regressions were also utilized to derive local volume tables for the unthinned plot in lot 2C for 1935, 1940, and 1945, years in which no height measurements were taken in that particular plot. The linear nature of the regression of volume over basal area compared to the curvilinear nature of the regression of height over diameter greatly simplified the problem of interpolation to estimate the missing regressions.

The statistical summaries of the two plantations (Tables 1 and 2) are based on consistent computational techniques. All basal areas are based on 0.1-inch diameter measurements. Volumes are computed on a total-cubic-foot basis, with board-foot volumes being estimated only for 1955. The board foot-cubic-foot ratios estimated only for 1955. The board foot-cubic-foot-ratios estimated from Table 2 of Spurr (*10*) were checked by the measurement of 26 trees felled in lot 2C in 1955. Each tree was measured for d.b.h. and total height, and the logs cut from it were scaled by the International ¼-inch log rule. When the resulting board foot—cubic foot ratios were adjusted to the average diameter of the stand preceding cutting, the actual ratio for lot 2B was computed to be 4.75 as against the estimated value of 4.82. In lot 2C, the actual ratio was 4.85 and the estimated 4.90. Since the differences were not statistically significant, the estimates from the generalized relationship were allowed to stand.

Due to variation in the choice of trees for height measurements in successive times of measurements, the mean height of the trees actually measured did not consistently measure the mean height of the dominant and codominant trees. For this reason, the height read from the height-diameter curve corresponding to the tree of mean diameter (i.e., the diameter of the tree of mean basal area) was used to characterize the height of the stand. Such a measure of height, although the best obtainable under

TABLE 1.—STATISTICAL SUMMARY, WHITE PINE, SAGINAW FOREST. BLOCK I, LOT 2B. THINNED AND UNTHINNED PLOTS. PER ACRE BASIS

		No. of trees		Basal area[1]		Mean d.b.h.		Height[2]		Cubic ft.	
		T	U	T	U	T	U	T	U	T	U
1916		4350	4265	101.00	100.11	2.1	2.1			763	780
1920	Before	3265	3682	136.57	150.92	2.8	2.7	22	22	1420	1607
	Cut	1281		27.90						250	
	After	1984		108.67		3.2		23		1170	
1925	Before	1955	2786	165.74	194.38	3.9	3.6	30	29	2381	2740
	Cut	738		34.56						432	
	After	1217		131.18		4.4		32		1929	
1930	Before	1208	2052	171.38	213.63	5.1	4.4	39	36	3002	3595
	Cut	135		8.31						127	
	After	1073		163.07		5.3		40		2875	
1935	Before	1034	1630	197.12	226.86	5.9	5.05	44	42	3973	4393
	Cut	127		12.72						225	
	After	908		184.40		6.1		45		3748	
1940	Before	899	1353	205.68	224.26	6.5	5.5	50	47	4710	4832
	Cut	153		22.47						483	
	After	746		183.21		6.7		51		4227	
1945	Before	738	1144	215.01	231.43	7.3	6.0	56	52	5398	5549
	Cut	178		35.57						848	
	After	560		179.44		7.7		57		4550	
1950	Before	547	925	196.91	226.92	8.1	6.7	62	58	5398	5919
	Cut	144		33.50						847	
	After	403		163.41		8.6		63		4541	
1955	Before	399	815	186.86	229.18	9.3	7.2	73	68	6003[3]	6976[4]
	Cut	119		41.55						1336	
	After	280		145.31		9.8		73		4664	

[1]Basal Area computed by 0.1 inch diameter classes.
[2]Height of tree of mean diameter.
[3]Assuming BF/CF ratio of 4.82 (*10*, Table 2) the approximate BF volume is 28,920 bd. ft./acre.
[4]Assuming BD/CF ratio of 3.64 the approximate BF volume is 25,393 bd. ft./acre.

TABLE 2.—STATISTICAL SUMMARY, WHITE PINE, SAGINAW FOREST. BLOCK I, LOT 2C. THINNED AND UNTHINNED PLOTS. PER ACRE BASIS.

		No. of Trees		Basal area		Mean d.b.h.		Height[2]		Cubic ft.	
		T[3]	U[3]	T	U	T	U	T	U	T	U
1920	Before	1942	1893	116.69	118.23	3.3	3.4	22	20	1285	1367
	Cut	521		12.99						108	
	After	1421		103.70		3.7		23		1177	
1925	Before	1393	1493	155.99	159.65	4.5	4.4	32	31	2340	2391
	Cut	394		22.47						300	
	After	999		133.52		4.9		33		2040	
1930	Before	1013	1133	176.11	178.64	5.6	5.4	39	40	3170	3346
	Cut	84		7.22						117	
	After	929		168.89		5.8		40		3053	
1935	Before	924	898	207.53	189.79	6.4	6.2	45	46	4273	3993
	Cut	89		9.10						150	
	After	835		198.43		6.6		46		4123	
1940	Before	825	789	217.52	196.77	7.0	6.8	50	51	4953	4542
	Cut	169		24.62						488	
	After	656		192.90		7.3		51		4465	
1945	Before	656	686	227.37	216.33	8.0	7.6	57	59	5736	5691
	Cut	98		18.24						403	
	After	558		209.13		8.3		58		5333	
1950	Before	549	595	229.67	221.48	8.8	8.4	62	65	6364	6303
	Cut	75		16.51						417	
	After	474		213.16		9.1		63		5947	
1955	Before	474	549	234.55	232.63	9.5	8.8	71	75	7312[4]	7676[5]
	Cut	94		31.47						980	
	After	380		203.08		9.9		71		6332	

[1]Basal Area computed by 0.1 inch diameter classes.
[2]Height of tree of mean diameter.
[3]T is thinned plot, U is unthinned plot.
[4]Assuming BD/CF ratio of 4.90 (*10*, Table 2) the approximate BF volume is 35,929 bd. ft./acre.
[5]Assuming BD/CF of 4.6 the approximate volume is 35,310 bd. ft./acre.

the circumstances, scarcely permits a comparison of height growth between the thinned and unthinned plats because the mean diameter is artificially changed by the treatments. The measure does, however, present valid information on the trend of height growth in the stand as a whole and is presented for that purpose.

The successive thinnings in the two stands are characterized by percent number of trees cut and percent basal area cut in Table 3. The cumulative effect of these thinnings on the growth of the stands is summarized in Table 4. In this presentation mean annual increment refers to the entire life of the stand from 1904 to 1955 (excluding the two years of seedling life before outplanting, and current annual increment to the period from 1950 to 1955). Net current increment is simply the difference between successive measurements without regard to harvest or mortality while gross increment takes into account the growth made by trees which were subsequently removed from the stand either by natural mortality or by thinning operations.

The importance of computing mortality losses so as to obtain true gross increment values cannot be too strongly emphasized. This has seldom been done in American thinning studies. Often, the amount cut from the thinned stand will be added to the present volume of the thinned stand to give the total yield of the thinned stand. This total yield will approximate gross increment if mortality in the thinned stand has been slight. Too often, however, the analyst will neglect to compute mortality losses in the unthinned stand, and will compare the total yield of the thinned stand with the present yield of the unthinned stand, and claim that he has demonstrated that thinnings has increased growth. In other words he is comparing gross increment of the thinned stand with net increment of the unthinned stand. Such a comparison has validity in yield comparisons although it does not take into account the costs and returns of thinning, but it has no validity whatsoever in growth comparisons.

TABLE 3.—SEVERITY OF THINNINGS BY PERCENT NUMBER OF TREES AND PERCENT BASAL AREA REMOVED. SAGINAW WHITE PINE, 1915-1955

Year	Age from seed	Lot 2B (Crown) Percent no. of trees cut	Lot 2B (Crown) Percent basal area cut	Lot 2C (Low) Percent no. of trees cut	Lot 2C (Low) Percent basal area cut
1915	14	11.8	—	None	None
1920	19	39.2	20.4	26.8	11.1
1925	24	37.7	20.9	28.3	14.4
1930	29	11.2	4.8	8.3	4.1
1935	34	12.2	6.5	9.6	4.4
1940	39	17.0	10.9	20.5	11.3
1945	44	24.1	16.5	15.1	8.0
1950	49	26.3	17.0	13.7	7.2
1955	54	29.8	22.2	19.8	13.4
Mean, 1920-55		24.7	14.9	17.8	9.2

TABLE 4.—COMPARISON OF STANDS BEFORE 1920 CUT WITH CONDITION AFTER 1955 CUT. SAGINAW WHITE PINE. PER ACRE BASIS

	Lot 2B Thinned	Lot 2B Unthinned	Lot 2C Thinned	Lot 2C Unthinned
Number trees				
1916	(4350)	(4265)	—	—
1920	3265	3682	1942	1893
Mortality	110	2867	38	1344
Cut	2875	—	1524	—
1955	280	815	380	549
Basal area				
1920	137	151	117	118
Mortality	13	132	4	91
Cut	217	—	143	—
1955	145	229	203	233
Net c.a.i.[1]	4.80	0.40	4.40	2.40
Gross c.a.i.	4.80	3.23	4.40	3.70
Net m.a.i.[2]	3.46	4.24	4.35	4.31
Gross m.a.i.	6.94	6.69	6.48	6.00
Mean d.b.h.				
1920	2.8	2.7	3.3	3.4
1955	9.8	7.2	9.9	8.8
Height (Mean trees)				
1920	22	22	22	20
1955	73	68	71	75
Cubic feet				
1920	1420	1607	1285	1367
Mortality	288	2291	78	1622
Cut	4558	—	2963	—
1955	4664	6976	6332	7676
Net c.a.i.[1]	292	211	273	275
Gross c.a.i.	292	298	273	318
Net m.a.i.[2]	111	129	135	142
Gross m.a.i.	175	172	174	172
Area (acres)	0.236	0.173 (2 plots)	0.213	0.175
Conversion factor	4.24	5.78	4.69	5.72

[1]Period 1950-1955.
[2]Plantations established 1904 with 2-0 stock. Therefore stand is 53 years old from seed in 1955, and had passed through 54 growing seasons prior to measurement.

Results and Discussion

Growth of the Unthinned Stands.—The development of the unthinned plantations for the first 54 years from seed closely parallels that of other old white pine plantations. Both of the Saginaw stands have leveled off at a basal area of approximately thirty thousand board feet per acre (actually 25M and 36M on the two plots). The Biltmore (N.C.) plantation at 56 years from seed had a basal area of 185 square feet in trees 3.6 inches and larger in the unthinned plot (*11*); 40-60 year-old plantations in New Hampshire had basal

areas of 208 to 243 square feet (*1*); and 57-62 year-old plantations in Connecticut had board-foot volumes of 25 to 35 thousand (basal area values not given, *4*). In a detailed study of a number of white and red pine thinning experiments Smithers found that the maximum basal area reached on the better sites ranged from 220 to 250 square feet per acre (*7*).

It seems quite clear that the unthinned plots have reached their maximum carrying capacity in terms of basal area and that this value will remain around 230 square feet per acre, varying with the incidence of mortality. Future net basal area growth, therefore, will approximate zero, although volume growth will continue to increase as long as the stand grows in height.

Severity of thinning.—The thinnings in both stands have been moderate to light throughout the period of treatment (Table 3). The 1930 and 1935 thinnings were extremely light. On the average, only 14.9 percent of the basal area has been removed each five years in lot 2B (crown thinning) and only 9.2 percent in lot 2C (low thinnings). The cumulative effect of the long series of moderate thinnings, nonetheless, has been to reduce the stockings of the thinned plots. In 2B, the thinned plot has present basal area of 145 square feet per acre as compared to 229 for the unthinned plot. In lot 2C, the comparable values are 203 and 233. There is no question but that the thinnings could have been more severe on occasion. Indeed, they very likely would have been had they been marked at the present time under the influence of current thinning philosophy. At the same time, it is quite clear that the thinnings have been severe enough to markedly affect the development of the stand. The sum total of the thinnings in lot 2C may be termed light, while those in lot 2B may be thought of as moderate.

Effect of thinning on gross increment.—The mean annual net and gross increments are given in Table 4 for basal area and cubic-foot volume. There is some evidence

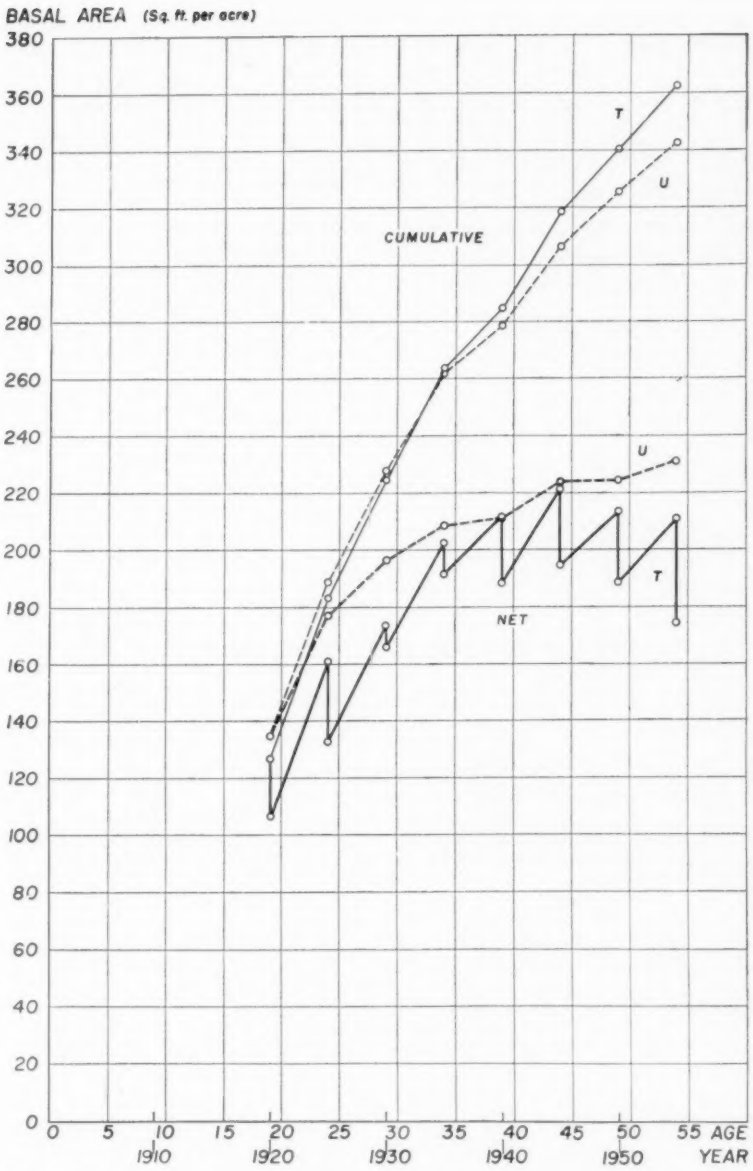


FIG. 4.—Net and cumulative basal areas of Saginaw white pine, 1920-1955. Curves are averages of two thinned plots (solid lines) and two unthinned plots (dashed lines).

that thinning has slightly improved the gross mean annual increment in basal area, but the increase is clearly not significant in the east of lot 2C. On a cubic-foot basis, the gross m.a.i. values are amazingly consistent throughout, being 175 and 172 cubic feet per acre per year for thinned and unthinned 2B, and 174 and 172 for thinned and unthinned. After making due allowance for the absence of replication, the small size of the plots, and the slight variation in site quality, there is little evidence that thinning has increased growth. In fact, the closely comparable gross mean annual increment values of the thinned and unthinned stands suggest strongly that the thinning thus far has had no effect on the total cubic-wood production of the stand. This finding is in complete accord with present philosophy on thinning effects (*9*, *3*, *5*).

In Figure 4, the two sets of plots

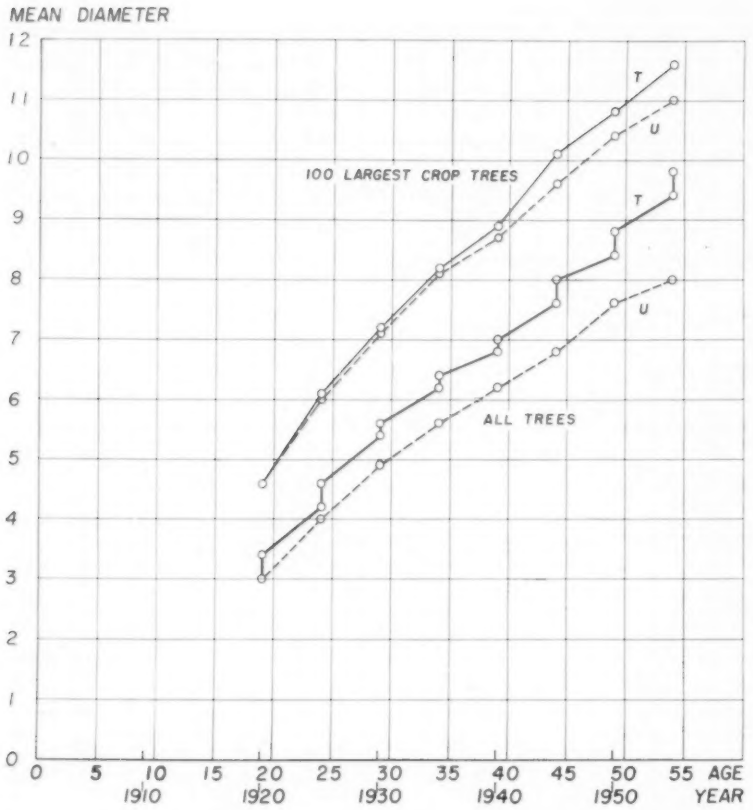


FIG. 5.—Mean diameters of all trees and of 100 largest trees per acre (as of 1955), 1920-1955. Curves are averages of two thinned plots (solid lines) and two unthinned plots (dashed lines).

are treated as replicated thinned and unthinned plots and the basal area data for each pair have been averaged and plotted. The net curve of basal area over age from seed follows the conventional pattern. The light thinnings in 1930 and 1935 clearly permitted the thinned stands to attain densities nearly as high as those in the thinned stands. In the cumulative curves, the basal area losses from cutting and mortality have been added back into the thinned stand. These curves again show some indication that basal area growth in the unthinned stands has gradually dropped below that of the thinned stands since 1935.

Although there is no change in cubic-foot increment as a result of thinning, and but little change in basal-area increment, it is quite possible that the effect of thinning will become more definite as the stands near maturity. Indeed, this improvement is highly possible and is in accord with the theory of stand growth. Although thinnings should not affect total production per acre as long as both thinned and unthinned stands fully utilize the site, the unthinned stand may gradually deteriorate to the point where it no longer fully occupies the site due to crown friction and crown deterioration. There is at least visual evidence that such is the case in the Saginaw white pine, for the three crowns in the unthinned stands have become short, thin, and generally of less vigor than those in the thinned stand.

The better vigor of the trees in the thinned stands has long term silvicultural implications. First, a longer rotation is possible because of the better condition of the trees. Second, the better-developed crowns will probably permit application of the shelterwood method in the harvest of the mature crop and establishment of reproduction. In contrast, the unthinned stand probably will have to be clear-cut at a relatively early age.

Effect of thinning on yield of merchantable material.—What the thinnings have accomplished is not so much an increase in biological production as a concentration of that biological production on the bigger and more merchantable stems. Whereas the unthinned stands contain 815 and 549 stems per acre and have a mean diameter (diameter of tree of mean basal area) of 7.2 and 8.8 inches for 2B and 2C respectively, the comparable thinned stands have only 280 and 380 trees per acre, but have reached mean diameters of 9.8 and 9.9 inches.

The change in mean diameter averaged for the two stands in the lower set of curves in Figure 5. Although the present average diameter of the thinned stands is 9.8 inches as against 8.0 for the unthinned stands, it is apparent that much of this increase is due to the raising of the average by cutting out the smaller trees in the successive thinnings. To test whether or not the growth of the larger trees was actually stimulated by thinning, the mean diameter (diameter of tree of mean basal area) of the 100 largest crop trees per acre in 1955 was computed for each time of measurement. The results, plotted in the upper set of curves in Figure 2, show that the growth of these 100 largest trees was little affected by thinning for the first 15 or 20 years of the experiment. Since 1935, though, the crop trees in the thinned stands have gradually pulled away from their counterparts in the unthinned stands. As in the case of basal areas, this benefit seems to result not so much from stimulation of growth in the thinned stands as from deterioration of growth in the unthinned stands due to reduction in crown dimensions and tree vigor in the latter that apparently began at about 1935 and has gradually become more severe.

In the above discussion, the two thinned and two unthinned plots, each pair in a different plantation,

have been treated as replications even though their silvicultural histories have been somewhat different. Actually, the mean diameters of the thinned trees in lot 2B have increased at a higher rate relative to the unthinned trees than in the case of lot 2C. It is difficult to say, however, whether this trend is due to the combination of crown thinning and slightly heavier thinnings in the former case, or to minor variations in site quality. The unthinned plot in lot 2C is on a slightly better site than the other plots, a fact that confounds the results of the individual trials.

The yields of board feet per cubic foot of tree bole are substantially higher for the thinned than for the unthinned stands (Tables 1 and 2). In lot 2B, the unthinned stand averages only 3.64 board feet per cubic foot in contrast to 4.82 for the thinned stand. Although the present cubic-foot volume is higher in the unthinned stand, the board-foot volume is considerably higher in the thinned stand; the mean annual growth being 622 board feet per acre in the thinned stands and 584 in the unthinned stands. The difference is much less pronounced in lot 2C where the thinnings have been lighter and the stocking of the thinned plot has remained at comparable levels to that of the unthinned plot. Presumably, heavier thinnings might have decreased the total cubic-foot increment, but would have resulted in faster diameter growth of the remaining crop trees so that they might well have resulted in an increase in board-foot yields.

Summary

Nine crown thinnings and eight low thinnings have been made at 5-year intervals in a white pine plantation on sandy outwash soil in the vicinity of Ann Arbor, Michigan. Although the four sample plots average only one-fifth of an acre, the regularity of the thinnings and the remarkable completeness of both the statistical and photographic record is noteworthy.

The site index based on actual growth is 64 based on height of the tree of mean d. b. h. The comparable height of the dominants and codominants was 66 feet.

The thinnings have ranged from moderate to light, with an average of 14.9 percent of the basal area having ben cut in the crown thinning plot and 9.2 percent in the low thinning plot.

The thinnings have made no appreciable difference in the total cubic-foot volume produced (gross mean annual increment) and only slight improvement in the basal area increment in the two stands. They have rather served two purposes: first to pre-salvage the mortality, and second, to concentrate much of the growth on the larger stems. Wood material that would otherwise have been lost has been incorporated into the remaining stems.

The thinned stands have fewer stems and larger diameters than the unthinned stands. Crop trees are also larger. The mean diameter of the 100 largest crop trees per acre averages 11.6 inches in the two thinned stands and only 11.0 inches in the two unthinned stands.

There is some indication that the thinned stands are currently growing faster than the unthinned stands because crown friction and crown deterioration are gradually reducing the vigor of the unthinned stands to the point where the stands no longer fully occupy the site. Current annual increment of basal area in the thinned stands exceeds that of the unthinned stands. A longer rotation would be possible in the thinned stands as well as application of shelterwood cuts. The unthinned stands, however, will probably have to be clearcut at a relatively early age.

All factors considered, the thinned stands should produce a substantially higher board-foot yield at maturity, even though the basal area and total cubic-foot production may not be greatly affected by the silvicultural treatment.

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Watershed Management and Research on Salmon Streams of Southeast Alaska

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SALMON AND TIMBER are the two most important basic natural resources of Southeast Alaska. The wholesale value of the salmon pack produced on the Tongass National Forest, which comprises nearly all of Southeast Alaska, has averaged about $45,000,000 annually (*1*) during the period 1926 to 1953. Large pulp developments, designed to utilize the dense stands of commercial timber in Southeast Alaska, are taking shape. A 400-ton mill which produces dissolving pulp has been in operation at Ketchikan since 1954. In addition, preliminary timber sale awards have been made in the past two years by the Forest Service for large pulp developments at Wrangell, Juneau, and Sitka.

The fisheries resource and the timber resource are closely related. Both the salmon and timber industries are dependent upon salmon stream watersheds for continuing supplies of raw material. The management of salmon during the important stage of the life cycle spent in fresh water is basically a watershed management problem. Maintenance of freshwater conditions which are favorable for adult spawners, and favorable to the development of salmon spawn and fry until they return to salt water, are largely dependent on maintaining a stream free from obstructions, with suitable spawning grounds, a stable streamflow, and suitable water quality. Proper multiple-use management of the water and timber resource requires skill and knowledge supported by sound research.

A program of research was begun in 1949 by the Alaska Forest Research Center to relate logging practices by Forest Service standards to changes in the large-scale physical factors of the stream environment. Presentation of a few basic concepts and a brief review of the problem are desirable, however, before discussing the study.

Salmon

All five species of Pacific salmon —pink (*Oncorhynchus gorbuscha*) (Fig. 1), chum (*O. keta*), coho or silver (*O. kisutch*), king (*O. tshawytscha*), and sockeye (*O. nerka*)—spawn in the waters of Southeast Alaska. The first three species are the most important from the viewpoint of value of pack, as well as importance of watershed management. Streams supporting these three species are widely distributed in the region. The king salmon spawns only in the larger rivers in Southeast Alaska and the sockeye only in streams draining larger lakes. These two species will not be discussed further here. All species of Pacific salmon are anadromous. The adult fish ascend and spawn in streams in which they were hatched. The eggs are deposited in the fall of the year in redds (nests) dug by the female and are covered with gravel after fertilization. Hatching occurs the following spring. The free-swimming fry of the pink and chum salmon move immediately to salt water upon hatching. Coho salmon fry spend a year in fresh water and are affected to a marked extent by stream conditions during this period of their life history (*5*).

Heavy mortality takes place in the early life of all three species from fertilization of the egg to emergence of the fry. Sheridan (*7*) states that for pink salmon this mortality often exceeds 90 percent in fresh water. Neave (*5*) has pointed out that mortality varies by species and may be in part effected by differences in physical condition of streams or portions of streams selected by the species. This mortality in fresh water is caused by various factors such as freezing, streambed scouring, siltation, and predators.

Stability of streamflow appears to be an important factor affecting the productivity of a salmon stream. A tentative rating (*2*) of streams in the Ketchikan sale area shows that streams whose watersheds contain flow-stabilizing lakes tend to be consistently better salmon producers than streams draining watersheds of equal area but without lakes. Scouring of stream gravels during floods may cause heavy mortality to salmon spawn and fry by either removing gravel and exposing them, or burying them by a deeper than normal layer of gravel which may cause difficulty in fry emergence from the gravels. Periods of very low water may expose eggs to temperature extremes, particularly to freezing temperatures during winter months. Salmon nests exposed by low water are shown in Figure 2. Developing eggs and fry require a constant supply of dissolved oxygen which is provided by constant subgrade flow of water through egg- and fry-bearing gravels. Erosion and streambed siltation may result in heavy mortality by reducing or eliminating the supply of dissolved oxygen. Shaw and Maga (*6*) found that the hatch of silver salmon eggs was significantly reduced by the application of silt-laden water to the gravel which contained fertilized eggs.

Timber and Watershed Management

The forest management problem

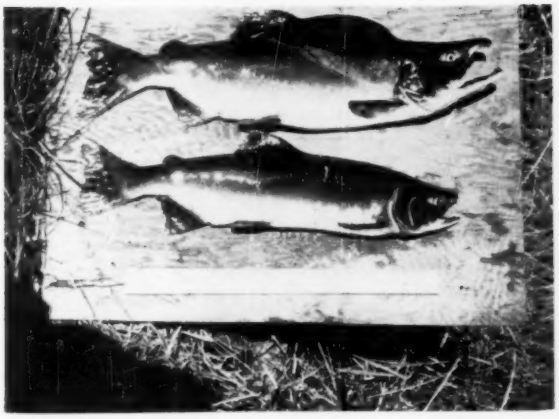

FIG 1.—Typical mature male and female pink or "humpback" salmon. The male has the pronounced hump. The scale shown is 18 inches long.

FIG 2.—Salmon nests exposed by low water, Indian Creek. Spawning salmon could be seen along far bank at the time this photograph was taken.

is to manage the timber stands to produce continuous crops of wood for the timber industries in such a manner as to cause a minimum of disturbance or change to the natural stream which might adversely affect its salmon productivity. Until more is known of the factors affecting the hatching of salmon spawn and the survival of fry, the goal is to maintain the streams in as near a natural condition as is possible.

The U. S. Forest Service has for a number of years included in timber sale contracts provisions for the protection of salmon streams on the national forests in Alaska. Briefly, these provisions prohibit diverting streams, felling timber in or otherwise obstructing the streams, yarding timber down or across streams, and other possible harmful practices. Where crossings are necessary, bridges are required or crossings are designated at locations where rock outcrops or other conditions limit possible damage to the streambed. Log dumps and booming grounds are located away from the mouths of streams. Special provisions, necessary to safeguard the streams, are worked out on the ground by U. S. Fish and Wildlife and Forest Service personnel. These provisions are incorported in the logging plan and sale contract. Recommended practices have been developed by experience over the years. As an example: in the past, strips of timber were often left along margins of the streams, but it was found that these trees usually were windthrown and fell into, or across, the streams. The practice now is to fell and remove the timber from the stream banks.

Research Program

In planning the study on the effects of logging on salmon streams, the Research Center used what was considered normal logging practice as a base, or starting point. It was felt that logging on the watersheds of the national forests of Alaska would always be carried on with at least the abovementioned provisions for protection of the streams. After consultation with U. S. Fish and Wildlife personnel in fisheries management and research, the Fisheries Research Institute of the University of Washington, and other agencies, four salmon streams located on, or near, the first operating area of the Ketchikan Pulp Sale were selected for study. The study streams include Maybeso Creek, Harris River, Indian Creek —near Hollis on Prince of Wales Island—and Old Tom Creek in Skowl Arm. All are fair to moderately good salmon producers and are considered typical pink salmon streams. The watersheds of the first two streams are to be logged after a period of calibration. The watersheds of the latter two are to remain uncut as controls. The Fish and Wildlife research division carries on a fry-trapping and marking program, and maintains a fish-counting weir on Old Tom Creek. A fry-trapping station is also operated on Harris River.

The Alaska Forest Research Center's studies, begun in 1949, have been limited to such physical factors as stream flow, stream temperature, streambed and channel change, turbidity, and sedimentation. Climatological data are recorded and yearly spawner counts are made. Stream gage houses containing continuous water level recorders, equipped with water temperature recording units, are maintained on all streams (Fig. 3).

The analysis of the first five-year pre-logging, or calibration, period is nearing completion and a report will be published in the near future. Logging of the Maybeso Creek drainage began in 1953, but it is too early as yet to draw any definite conclusions as to whether there is any effect of logging on this stream. A few results of the calibration period analysis will be discussed.

The majority of streams on the islands and the mainland are typically short drainages. The watersheds, which are generally quite

small, have been heavily glaciated. The soils are thin and overlie bedrock. Ground-water storage capacity of these watersheds is relatively low because of the impermeable nature of underlying materials, steep slopes, and general shallowness of the soils. Runoff is therefore generally rapid, except in streams which head in lakes. Peak stream discharges may occur as soon as nine hours after precipitation peaks (*3*).

Floods occur most commonly in the fall when precipitation is heavy. Streams are generally low from late December until early April as a result of freezing temperatures and snowfall. This may be a critical period for the development and survival of salmon spawn. Discharge increases with the coming of spring and snow melt. Stream discharge hydrographs at this time show a diurnal peak and trough corresponding to snow melt which is added daily to stream flow. On the study streams the influence of snow melt becomes limited or nonexistent after June or early July. Precipitation and stream discharge are at a minimum during June, July, and August.

Removal of trees[1] affects the hydrology of a watershed in a number of ways. Coniferous stands intercept 15 to 50 percent (*1*) of the precipitation. The amount of interception varies with precipitation intensity and character of the stand. Logging will probably result in a heavier snow cover on the cut over areas which can be expected to melt earlier than the snow in the timber. Reduced interception and transpiration losses may cause slight increases in summer discharges until the area is again revegetated. It is doubtful, however, that logging will appreciably increase the rate of runoff. To date, the streamflow pattern of Maybeso Creek has shown no appreciable change with more than half of the commercial forest area cut.

Fresh water temperature exerts an influence during several stages of the salmon life cycle, i.e., the spawning impulse, egg incubation, and fry development. Water temperatures are generally moderate in streams of Southeast Alaska. On the study streams the highest mean monthly temperature for any month during the period 1949-1953 was 57.4° F. which occurred in July 1951 on Old Tom Creek. The highest temperature reached was 66° F., recorded twice during the period of study on Indian and Old Tom Creeks. Duration of these maximum temperatures was short, averaging only 1.5 hours. The longest duration of any temperature over 60° F. was only 6.5 hours. Thirty degrees was the lowest temperature recorded on any stream. The longest duration of this temperature, which occurred several times, was only 11 hours. A close correlation was found between air temperature and water temperature. Rising air temperatures resulted in rising water temperatures; decreasing air temperatures resulted in decreasing water temperatures. The study will determine the magnitude of temperature change, if any, associated with the removal of timber from the watershed.

A considerable change in number and location of natural log jams, (Fig. 4) gravel bars and pools has taken place in the study streams during the calibration period. The amount of suspended silt and other sediments has been low, even during fall storms. Data on suspended sediment are obtained by collecting water samples during all stream stages. Silt deposition is being studied by remeasuring fixed cross sections and by "silt traps" buried in the stream bed. The sediment concentration in water samples collected last year from Maybeso Creek was not significantly different than the sediment concentration of the control streams during the same period.

Erosion and siltation probably constitute the most serious threat to the productivity of salmon

[1]Clearcutting will not denude large, unbroken areas of individual watersheds because commercial timber stands are intermingled with areas of non-merchantable types. Area of commercial forest land on the four study watersheds ranges from approximately 18 to 36 percent of the total watershed.

FIG. 3.—Gage house on Old Tom Creek in mid-March.

FIG. 4.—Harris River in early fall. The salmon spawn mainly in the riffles but pools and over-hanging logs provide protection against natural enemies.

streams following logging. Studies in other regions indicate that road construction is usually the cause of 75 percent or more of stream erosion, sedimentation, and turbidity. Proper road location and construction can minimize erosion and consequent stream sedimentation. The logging roads constructed in the Maybeso Creek drainage have been located well back from the creek. Subgrade material is end-hauled from borrow pits and, as a result, very little cutting or grading is done. This practice has held erosion to a minimum. As logging progresses on Maybeso Creek and Harris River drainages, more information on erosion and siltation will be obtained.

Conclusion

Alaska and our nation need both timber and fisheries resources. The forests and the watersheds must be managed to produce continuous timber crops and a relatively stable flow of good quality water necessary to maintain the productivity of salmon streams. This study on the physical effect of logging on salmon streams has been in progress for 7 years, and will continue for at least another 7 to 10 years. Studies to obtain information on the effect of physical changes on the fresh water stages of the salmon life cycle are being initiated by the U. S. Fish and Wildlife Service and the Fisheries Research Institute. Thus foresters and fisheries biologists are working jointly to develop a sound basis for multiple use management of two important resources in Alaska.

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Seasonal Effectiveness of 2,4,5-T Basal Sprays for Eradicating Ribes in White Pine Blister Rust Control in Illinois

E. D. Bergeson and Ralph W. Lorenz[1]

Since 1951, ribes eradication in Illinois has been accomplished with basal sprays of 2,4,5-T in fuel oil. These sprays have proven cheaper and more efficient than hand pulling and were effective during any season of the year. Results of the seasonal effectiveness of 2,4,5-T basal sprays in Illinois are given below.

WHITE pine blister rust, caused by the fungus *Cronartium ribicola* Fisher, has now been found on pine in 14 counties and on ribes (currants and gooseberries) in 24 of the 102 counties in Illinois. Control of the disease requires the removal of the ribes within infecting distance of the white pine, which is approximately 900 feet under most conditions. Some 2,500 acres of white pine, with an estimated potential value of 2 million dollars, were within the control area for the state in 1955.

Although six species of the genus Ribes occur in Illinois,[2] the common gooseberry (*Ribes missouriense*) is most frequently found and has been the chief concern of eradication crews in the control of the white pine blister rust. Prior to 1950, hand pulling and grubbing were the principal methods employed to eradicate ribes in protecting white pine in Illinois. Grubbing bushes with hand tools is slow and requires hard manual labor. Rising wages have increased the cost of eradication four to five times since control work first started. Since 1951 the control work has been done with a basal spray of 2,4,5-T in fuel oil.

Objective

A program of chemical eradication of ribes was begun in central and northern Illinois in the summer of 1951 to devise cheaper and more effective methods than hand pulling or grubbing. Heretofore hand pulling and grubbing of ribes were performed during the growing season. Naturally there is a premium on labor at this time of the

[1]State leader and collaborator, white pine blister rust control in Illinois, Division of Plant Industry and Plant Inspection, Illinois Department of Agriculture, Belvidere, Illinois, and professor of forest research, Department of Forestry, University of Illinois Agricultural Experiment Station, Urbana, respectively.

[2]Jones, G. N. Flora of Illinois. Amer. Midland Nat. Monograph No. 2. 317 pp. Notre Dame, Ind. 1945.

year, especially on Illinois farms and then, too, these operations are impractical and inefficient when the soil is frozen. The objective was to find a cheap and efficient chemical means of eradicating ribes in Illinois at any season of the year.

Methods

In 1951 and 1952 preliminary tests were made at the Mason State Forest to check the effectiveness of 2,4,5-T for the chemical control of ribes. These results were highly encouraging and led to enlarged and more accurately controlled test plots at Sinnissippi Forest in Ogle County. Basal sprays, rather than foliage sprays, were chosen because they could be applied at any season of the year, and furthermore they did not require the large volumes of spray solution characteristic of the foliage sprays.

During the early summer of 1952, three sets of test plots of 12 each were laid out in a white oak woods at Sinnissippi Forest containing approximately 100 trees per acre with an average diameter of 15 inches. The aspect was northwest with 8 percent slopes. Each test plot was 33 feet square and equivalent to 1/40 of an acre. Ribes bushes averaged 2,000 per acre. The minimum number of ribes bushes found on any one plot was 11, and the maximum number was 136. Three formulations consisting of 6, 12, and 18 AHG (pounds of effective 2.4.5-T acid[3] per 100 gallons of No. 1 fuel oil) were applied as Treatments A, B, and C, respectively, each month of the year beginning July 1952 and continuing through June 1953. Basal spray treatments were applied with a two-gallon, pressure-type hand sprayer. An attempt was made to approximate procedure on actual control work. Some of the ribes had leaves piled in and around their base and there were numerous fallen canes entirely or nearly covered with leaves. During the winter months, one to eight inches of snow covered the ground. Neither snow nor leaves were removed from, in, or around the bushes. Approximately 6 inches of the lower stems, above the ground, leaf cover or snow, was sprayed to the point of runoff. The final examination of these plots was made May 1954.

As an additional check on the use of lower concentrations of 2,4,5-T, as a basal spray, 160 large ribes bushes were staked for identification—80 in Plot D and 80 in Plot E. In Test Plot D, 10 ribes were treated monthly with concentrations of 6 AHG, and in Test Plot E, 10 ribes were also treated monthly but with concentrations of 12 AHG. Both treatments began August 1953 and were continued through March 1954. Final results were interpreted in the field on July 11, 1955.

[3]Esteron 245 (propylene glycol butyl ether esters of 2,4,5-trichlorophenoxyacetic acid).

Results

Table 1 summarizes the results of Treatments A, B, and C. The data for the growing season represents the results of six monthly sprayings in 1952, April through September, and the data for the dormant season represents the results of six monthly sprayings made October 1952 through March 1953. These data show that basal spray solutions of 2, 4, 5-T in No. 1 fuel oil applied at concentrations of 6, 12, and 18 AHG are effective in the control of *Ribes missouriense* at any season of the year. Furthermore, seasonal obstacles such as leaves or snow accumulating at the base of ribes did not limit the effectiveness of the basal spray. Of the 656 ribes treated during the growing season, 97 percent were completely killed, while 98 percent of the 1,183 ribes

TABLE 1.—THE SEASONAL EFFECTIVENESS OF 2,4,5-T BASAL SPRAYS FOR ERADICATING RIBES MISSOURIENSE IN ILLINOIS

Season	No. of ribes treated	Gal. of spray solution used	Time in hr. to spray ribes	Number of ribes and FLS[1] missed—not sprayed		Treated ribes with live upright canes		Treated ribes with live fallen canes under leaves		Treated ribes with crown sprouts		Percent of treated ribes completely killed
				Ribes	FLS[1]	Ribes	Upright canes	Ribes	Fallen canes	Ribes	Crown sprouts	
Treatment A, 6 AHG[2]												
Growing[3]	154	1.3	0.8	8	14	3	3	2	2	3	4	95
Dormant[4]	208	2.2	0.9	3	3	1	1	2	5	4	4	97
Totals	362	3.5	1.7	11	17	4	4	4	7	7	8	96
Treatment B, 12 AHG[2]												
Growing[3]	313	2.7	1.1	2	3	1	1	6	7	0	0	98
Dormant[4]	509	4.9	1.7	12	15	0	0	15	15	2	2	97
Totals	822	7.6	2.8	14	18	1	1	21	22	2	2	97
Treatment C, 18 AHG[2]												
Growing[3]	189	1.5	0.9	2	3	0	0	2	2	0	0	99
Dormant[4]	466	4.2	1.5	6	11	0	0	4	10	0	0	99
Totals	655	5.7	2.4	8	14	0	0	6	12	0	0	99
Combined totals for Treatments A, B, and C												
Growing[3]	656	5.5	2.8	12	20	4	4	10	11	3	4	97
Dormant[4]	1,183	11.3	4.1	21	30	1	1	21	30	6	6	98
Totals	1,839	16.8	6.9	33	50	5	5	31	41	9	10	98

[1]Number of feet of live stem.
[2]Pounds of effective 2,4,5-T acid per 100 gal. of No. 1 fuel oil.
[3]April through September 1952.
[4]October 1952 through March 1953.

treated during the dormant season were completely killed. Complete kill in this study means the tops and roots were killed and there were no crown sprouts present.

All of the 160 ribes bushes which were treated monthly during the dormant season with 6 and 12 AHG, respectively, in Plots D and E were completely killed. Numerous root systems were dug and examined for signs of life. None was apparent nor were there any signs of sprouting or root suckering.

Discussion

The average costs per gallon of prepared spray solution were $0.38, $0.58, and $0.79 for concentrations of 6, 12, and 18 AHG, respectively. These costs are based on $15 per gallon for 2,4,5-T (4 lb. of effective acid per gallon) and $0.16 per gallon for No. 1 fuel oil. Average volumes of basal spray applied per bush in Treatments A, B, and C varied between 30 and 40 cubic centimeters (0.06 and 0.08 pt.). Costs of materials per bush in these same treatments were a little over 0.3 of a cent, slightly over 0.5 of a cent, and approximately 0.7 of a cent, respectively. Treatment C, using higher concentrations of 2,4,5-T, cost twice as much for materials to spray a bush as did Treatment A. These cost relationships show the importance of establishing minimum concentrations together with the proper dosage which will be effective in killing or controlling plant growth. The 100 percent kill of the 160 ribes in Treatments D and E merely offer additional evidence of the effectiveness of 2,4,5-T applied as a basal spray in fuel oil, especially during the dormant months. Concentrations of 6 and 12 AHG were completely effective all through the winter months, even though at times times snow and leaves persisted around the base of the bushes. Treatments D and E were applied with more care than were Treatments A, B, and C. Volume requirements of the spray solution were greater in Treatments D and E, because the bushes were larger than those in Treatments A, B, and C. Coulter[4] found that in the control of dormant white oak with 2,4,5-T, high or even moderate volumes of low concentrations were more effective than higher concentrations with reduced volumes.

TABLE 2.—LABOR REQUIREMENT FOR INITIAL CONTROL WORK BY HAND-PULLING AND GRUBBING AND BY BASAL SPRAY IN ILLINOIS

Control acres worked	Number ribes destroyed	Number 8-hour man-days	Ribes destroyed per man day	No. ribes per acre worked	Acres worked per man-day
Hand-pulling and grubbing, 1932-50					
20,151	1,506,825	3,884	388	74	5.1
Basal spray, 2,4,5-T in fuel oil, 1952-56					
2,616	133,577	116	1,152	51	22.5

Table 2 compares the labor requirement of hand-pulling and grubbing with that of the basal spray method. Time data for 19 years of blister rust control work in Illinois in which ribes were hand-pulled and grubbed show that on the average one man pulled 48.5 bushes per hour. Using and arbitrary wage rate of $1.50 per hour, the average cost for removing a ribes bush by hand was 3 cents. During the last 5 years in which the the basal spray program has been in effect in Illinois, 143.9 ribes bushes were destroyed per hour at an average cost of 1.3 cents per bush. This cost includes 1 cent for labor and 0.3 cent for spray solution. The spray solution cost is based on a solution strength of 6 AHG, which was found to be adequate.

Conclusions

In Illinois basal sprays of 2,4,5-T in No. 1 fuel oil are effective for the control and eradication of *R. missourieuse* during any season of the year. This type of chemical control is easier and more efficient than hand-pulling or grubbing. It costs only about one-third as much. An additional advantage is the fact that labor is more readily available during the dormant season than during the growing season and then, too, it is not practical to hand-pull or grub ribes while the soil is frozen.

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Progress of Heart Rot Following Fire in Bottomland Red Oaks

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THE MOST IMPORTANT cause of cull in southern hardwood forests is heart rot that develops from wounds made by fire. This study derived means by which the forester working with bottomland red oaks can determine the amount of decay behind old fire scars and estimate the rot that can be expected from new wounds.

The spread of heart rot in fire-scarred trees is influenced by many factors.[3] Some that are very difficult to measure, such as site, climate, and resistance of individual trees, were not considered in this study. Of the factors that were evaluated, age and size of scar, and height of butt bulge and hollow, were judged the most practical to use.

A number of studies have correlated age and size of fire scar with amount of rot, but only two have dealt with bottomland hardwoods. Kaufert[4] pointed out the general importance of rot following fire and indicated some factors that influence the rate at which the rot progresses. Hepting[5] related the rate of decay to age and size of trees, age and dimensions of scar, and species of fungus. However, his work was limited to trees smaller than 11 inches d.b.h. This study extends the range of tree diameters and offers additional information on the rate of decay induced by various species of fungi.

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[2]Southern Forest Expt. Sta., Forest Service, U. S. Dept. Agric., in cooperation with the Mississippi Agric. Expt. Sta. and the Southern Hardwood Forest Research Group.

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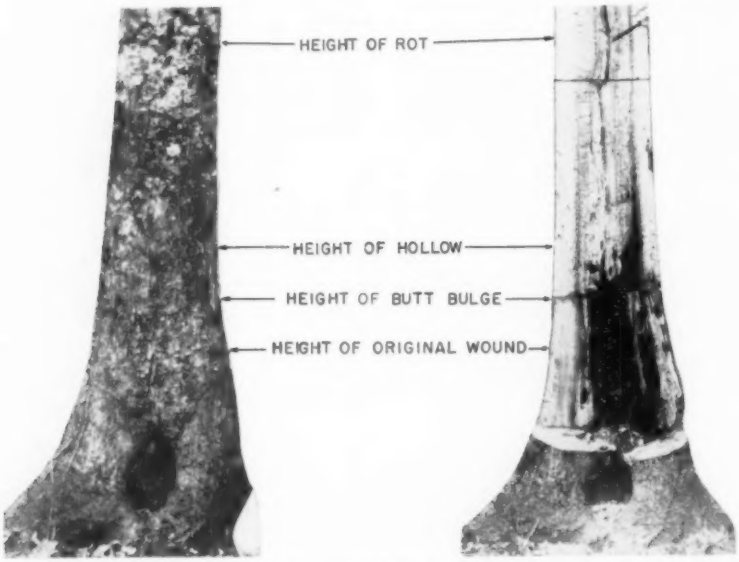

FIG. 1.—A fire-scarred Nuttall oak, wounded 16 years ago, before and after cutting. The heights of original wound, butt bulge, hollow, and rot are indicated.

Method of Study

The working areas were within the flood plain of the Missisippi River but protected from river rises by the levee system. The terrain is flat, and changes in elevation of only a few feet make wide variations in hardwood timber types. The soils range from heavy clays on the lower sites to silt loam and sandy loam on the higher elevations.

Species studied were Nuttall oak (*Quercus nuttallii* Palm.), willow oak (*Q. phellos L.*), water oak (*Q. nigra* L.), and cherrybark oak (*Q. falcata* var. *pagodaefolia* Ell.). One hundred and forty trees were sampled in the central Delta of Mississippi, and 34 in the northeast Delta of Louisiana.

A field crew went through some sample stands cutting all fire-scarred trees larger than 6 inches in diameter. In other stands, the sample trees were felled by commercial loggers. After the trees had been felled, the lower stems were sectioned into workable lengths and each section split open so that extent of hollow and rot[6] could be determined.

Ages of fire scars, which ranged from 4 to 61 years, were determined by counting annual rings in the callus formed at the edge of old wounds. Width and length of the scar, both at time of wounding and at time of sampling, were measured. Widths were taken at the widest point, usually near the ground. Also recorded was the height of butt bulge[7] (Fig. 1) above the ground.

[6]Height of rot was used in preference to cull volume because in practice the total cross-section of the stem is lost through jump-butting nearly to the upper limit of decay.

[7]Butt bulge is defined in this paper as an abnormal enlargement of the butt portion of the stem. It is nearly always accompanied by hollow butt and is different from normal butt swell.

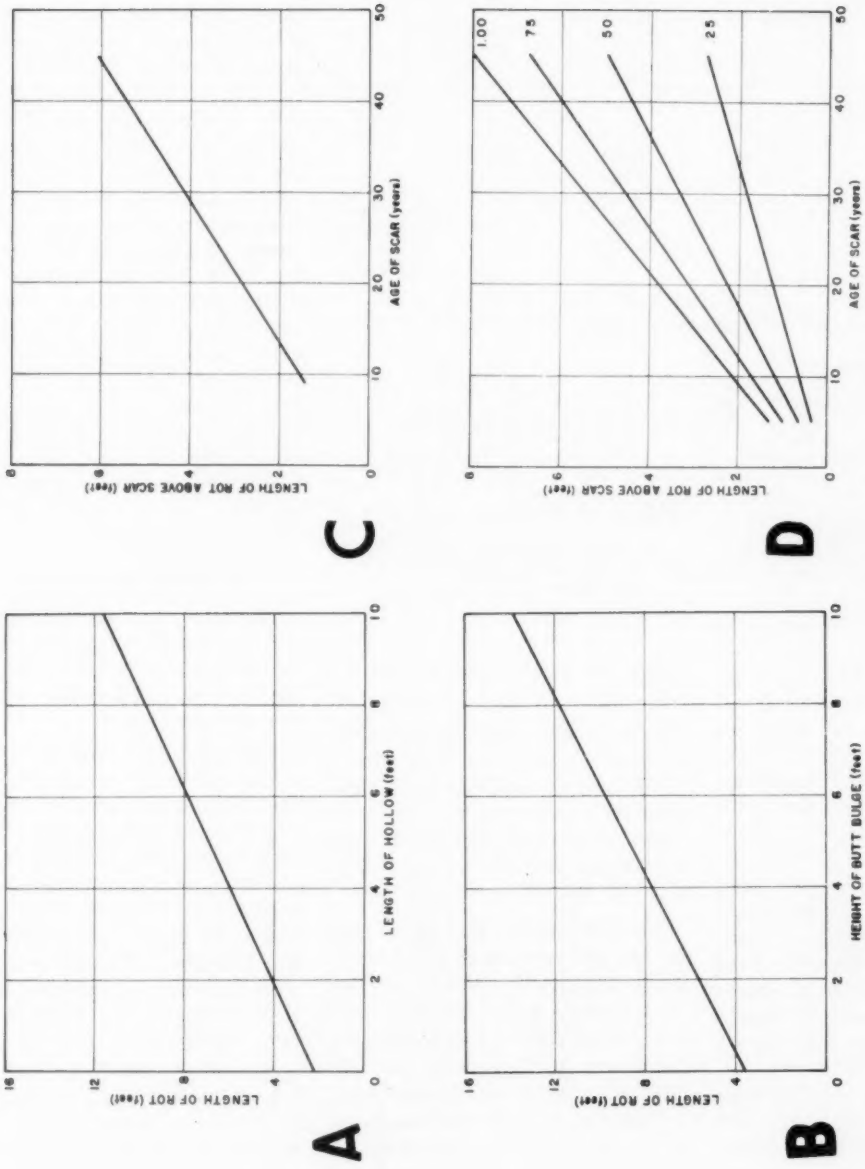

FIG. 2.—*A*. Length of heart rot in red oaks as related to length of hollow.
B. Length of heart rot in red oaks to height of butt bulge.
C. Length of heart rot above original fire scar in red oaks as related to age of scar.
D. Length of heart rot above original scar height in red oaks as related to age of scar for different values of width of original scar minus 2 divided by stump diameter at time of wounding.

TABLE 1.—FINAL REGRESSIONS USED IN DEVELOPING PREDICTIONS OF BUTT ROT IN FIRE-SCARRED RED OAKS IN THE SOUTHERN BOTTOMLAND[1]

Form[2]	Mean squared residual	Degrees of freedom for error	Coefficient of multiple correlation
(A) $Y = b_0 + b_1 X_1$	2.351	89	.858**
(B) $Y = b_0 + b_1 X_2$	6.318	86	.710**
(C) $Y - Z = b_0 + b_1 X_3$	8.659	172	.739**
(D)[3] $Y\text{-}Z = b_1 X_5 + b_2 X_4 X_5 + b_3 X_4 X_5^2$	6.827	171	.823**

Coefficients for above regressions

Coefficients[4]	A	B	C	D
b_0	2.172	3.582	0.279	.....
b_1	0.946	1.021	0.128	1.108
b_2	.....	.....	.....	0.262
b_3	.....	.....	.....	−0.095
C_{00}	.06005	.07399	.03310	.....
C_{01}	− .00789	− .01489	− .00118	.....
C_{11}	.00127	.00354	.00005	.03829
C_{12}	.....	.....	.....	− .00103
C_{13}	.....	.....	.....	− .00063
C_{22}	.....	.....	.....	.00017
C_{23}	.....	.....	.....	− .00011
C_{33}	.....	.....	.....	.00015

[1]Regression analysis indicated no significant difference attributable to locality in any of these regressions.

[2]Definition of variable terms:
Y = present length of butt rot (in feet),
Z = original length of wound (in feet),
$Y\text{-}Z$ = present length of butt rot minus original length of wound (in feet),
X_1 = length of hollow (in feet),
X_2 = length of butt bulge (in feet),
X_3 = age of wound (in years),
X_4 = age of wound minus 4 years (in years),
X_5 = original width of wound minus 2 inches, all divided by stump diameter at time of wounding (in inches).

[3]Regression through mean not significantly better than regression through origin. Higher degree polynomial terms in series failed to improve fit significantly.

[4]Subscripts denote order of single or joint term appearance in regression, not variable subscripts in term.

**Significant at the 1-percent level.

Incidental information was secured on the identification of fungi causing rot in the wood. In the southern bottomlands fruiting bodies or conks of fungi are rarely found in connection with decay behind fire scars. Therefore, the only means of identifying the fungi causing decay was by comparing cultures from decayed wood with known stock cultures. Cultures were prepared from 85 of the study trees. Sixty-six of these yielded pure cultures of decay fungi. With the help of the Forest Disease Laboratory, Beltsville, Maryland, 55 of the cultures were identified. The other 11 were not present in the Beltsville collection of named fungi. Although 23 different species of fungi were found, it is evident that these do not represent all that are associated with heart rot in bottomland red oaks.

Statistical Analysis

Inspection of the data indicated straight-line relationships between length of hollow and length of heart rot, and between height of butt bulge and length of heart rot. Of the 174 trees, 91 had hollows and 88 of these showed butt bulge. The data for these trees were fitted to equations A and B in Table 1. They are graphically illustrated in Figures 2A and 2B.

The data on size and age of scar for the 174 trees were fitted to 19 different regression equations. The final regressions are listed in lines C and D of Table 1 and graphically illustrated in Figures 2C and 2D. The rejected equations are listed in Table 2. No heart rot was found associated with wounds 4 years or less in age, or with fire scars 2 inches or less in width.

Analysis of variance showed no significant difference attributable to locality in these four regressions. The coefficients of multiple correlation for each were significant at the 1 percent level (Table 1).

Table 3 shows that rate of decay also depends upon the fungus causing the decay. For example, *Hydnum erinaceous* had an average annual rate of decay above the scar of 2.2±0.8 inches, while for *Pleurotus ostreatus* this figure was 1.5 ±0.5 inches. The difference between these fungi was significant at the 10 percent level. The upward spread of rot in this study was .6 inch per year behind small wounds (with widths up to ¼ of the basal circumference) and 2.0 inches behind large wounds (with widths over ½ the basal circumference). Hepting[5] gives an average upward spread of 2.3 inches per year for his black oak group, which included only trees less than 11 inches d.b.h. of the three species studied here. Hepting's figures for average annual rate of decay for the different fungus species are likewise within the same general range reported here. This study has extended the size class range and added several useful variables not used by Hepting.

Practical Application

This study has led to some information that foresters can conveniently use when marking or cruising hardwood timber that has been damaged by fires.

Estimating rot behind old scars.—The extent of rot behind an old fire scar can be estimated from the length of the hollow (as determined by probing with a stick) or from the height of the butt bulge. On the average, rot extends about 2 feet above the top of the hollow and 3½ feet above the butt bulge. If more precise relationships are desired, they can be read directly from Figures 2A or 2B.

A rule of thumb for deducting the volume lost through butt rot is to reduce the merchantable length of stem by the length of rot as indicated by hollow or butt bulge, and then reduce the d.b.h. measurement 1 inch for each 6 feet of rot. When necessary, the d.b.h. should also be corrected for butt swell. This rule is accurate enough for practical use with the whole range

[5]Op. cit.

TABLE 2.—LIST OF REJECTED REGRESSIONS (EITHER INFERIOR TO OR NO SIGNIFICANT IMPROVEMENT OVER FINAL REGRESSIONS)[1]

$Y = f\ (X_3X_7,\ X_3^2X_7,\ X_3X_7^2,\ X_3^2X_7^2)^2$
$Y = f\ (K,\ X_3,\ X_3^2,\ X_3X_8,\ X_3^2X_8,\ X_3X_8^2,\ X_3^2X_8^2)$
$Y = f\ (K,\ X_3,\ X_3^2,\ X_3X_7,\ X_3^2X_7,\ X_3X_7^2,\ X_3^2X_7^2,\ X_3^2X_7^2X_8,\ X_3X_7^2X_8^2,\ X_3^2X_7^2X_8^2)$
$Y = f(K,\ X_3,\ X_3^2,\ X_3X_7X_8,\ X_3^2X_7X_8,\ X_3X_7^2X_8,\ X_3^2X_7^2X_8,\ X_3^2X_7^2X_8,\ X_3X_7^2X_8^2,\ X_3^2X_7^2X_8^2)$
$Y = f\ (K,\ X_3X_{11},\ X_3^2X_{11},\ X_3X_{11}^2,\ X_3^2X_{11}^2)$
$Y = f\ (K,\ X_3X_{10},\ X_3^2X_{10},\ X_3X_{10}^2,\ X_3^2X_{10}^2)$
$Y = f\ (K,\ X_3X_{10}X_{11},\ X_3^2X_{10}X_{11},\ X_3X_{10}^2X_{11},\ X_3^2X_{10}^2X_{11},\ X_3X_{10}^2X_{11}^2,\ X_3^2X_{10}^2X_{11}^2)$
$Y = f\ (X_4X_6,\ X_4^2X_6,\ X_4X_6^2,\ X_4^2X_6^2)^{2,3}$
$Y = f\ (X_4X_{10},\ X_4^2X_{10},\ X_4X_{10}^2,\ X_4^2X_{10}^2)^2$
$Y = f\ (X_4X_6X_{10},\ X_4^2X_6X_{10},\ X_4X_6^2X_{10},\ X_4^2X_6^2X_{10},\ X_4X_6^2X_{10}^2,\ X_4^2X_6^2X_{10}^2)^2$
$Y = f\ (X_4X_5,\ X_4^2X_5^2)^{2,4}$
$Y = f\ (X_4X_{10},X_4^2X_{10}^2)^2$
$Y = f\ (X_4X_5X_{10},\ X_4^2X_5X_{10}^2)^2$
$Y = f\ (K,\ X_9)$
$Y\text{-}Z = f\ (K,\ X_5,\ X_4X_5,\ X_4X_5^2,\ X_4^2X_5^2)$
$Y\text{-}Z = f\ (K,\ X_{10},\ X_4X_{10},\ X_4X_{10}^2,\ X_4^2X_{10}^2)$
$Y\text{-}Z = f\ (X_{10},\ X_4X_{10},\ X_4X_{10}^2)^2$
$Y\text{-}Z = f\ (K,\ X_3,\ X_3^2)^5$

[1]Definition of terms:
Y = present length of butt rot (in ft.).
Z = original length of wound (in ft.).
$Y\text{-}Z$ = present length of butt rot minus original length of wound (in ft.).
X_1 = length of hollow (in ft.).
X_2 = length of butt bulge (in ft.).
X_3 = age of wound (in years).
X_4 = age of wound minus 4 years (in years).
X_5 = original width of wound minus 2 inches, all divided by stump diameter (in inches).
X_6 = original width of wound minus 2 inches.
X_7 = present length of fire scar (in inches).
X_8 = present width of fire scar (in inches).
X_9 = present diameter of rot (in inches) at stump height (1 to 2 feet).
X_{10} = original length of wound (in inches).
X_{11} = original width of wound (in inches).
K = a constant appropriate to a given regression.
[2]Regressions through means not significantly better than regressions through origin. Higher degree polynomial terms did not significantly improve fit.
[3]Differences between crown classes significant.
[4]Differences between localities significant.
[5]No significant curvilinearity.

TABLE 3.—FUNGI IDENTIFIED IN CONNECTION WITH FIRE-SCAR DECAY IN BOTTOMLAND RED OAKS

Fungi isolated[1]	Cases	Average annual rate of decay above scar[2]
	No.	*Inches*[3]
Pleurotus ostreatus	10	1.5 ± 0.5
Hydnum erinaceus	8	2.2 ± 0.8
Polyporus lucidus	6	3.0 ± 1.4
Polyporus fissilis	5	2.5 ± 1.4
Polyporus zonalis	3	2.9
Odontia spp.	3	1.9
Lentinus tigrinus	2	1.6
Ustulina vulgaris	2	1.9
Polyporus versicolor	2	0.7
Corticium lividum	1	2.6
Stereum frustulosum	1	7.8
Stereum gausapatum	1	3.9
Polyporus sulphureus	1	3.7
Merulius tremellosus	1	3.3
Poria andersonii	1	4.4
Poria laevigatus	1	1.5
Fomes ignarius	1	3.6
Stereum subpileatum	1	1.3
Polyporus obtusus	1	1.3
Fomes geotropus	1	1.6
Stereum rameale	1	2.4
Fomes robustus	1	1.6
Fomes lobatus	1	2.1

[1]Eleven of the 66 fungi isolated in the present study have not been identified.
[2]Analysis by the "t" test indicated that *Hydnum erinaceus* differs in rate of decay above scar from *Pleurotis ostreatus* at the 10 percent level of significance. These two fungi differ from *P. lucidus* and *P. fissilis* in annual rate of decay above scar at the 10 percent level of significance.
[3]Mean ± standard error.

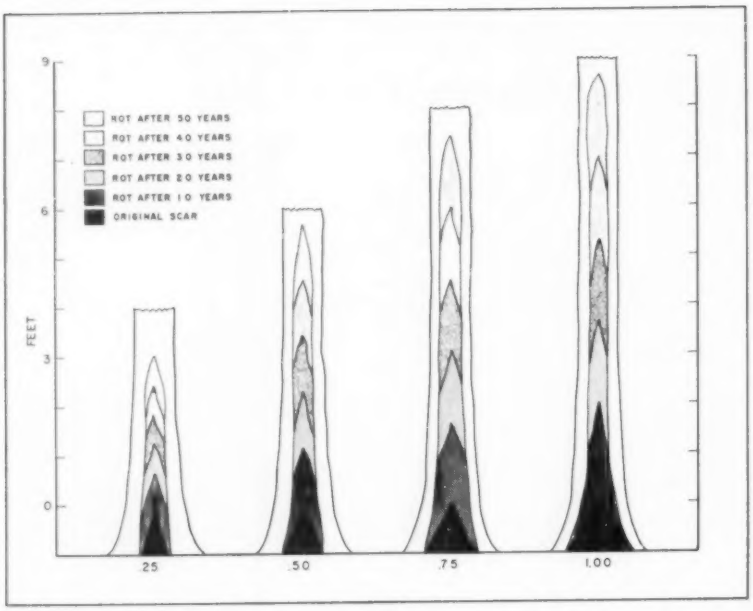

FIG. 3.—Increase of heart rot above original scar height for various values of the ratio $\frac{\text{original wound width minus 2}}{\text{stump diameter at time of wounding}}$

of bottomland red oaks. In principle, however, a smaller reduction in d.b.h. is in order for a form class higher than 75, and vice versa.

This information should be applied with caution when scars are more than 50 years old. It is known that with increase in age, many rot fungi will change their rate of spread.

Rot expected from recent scars.—In evaluating fire damage for claims, and in marking for salvage cuttings, it is important to be able to predict soon after a fire the rot to be expected in the future. Such a prediction can be obtained by using age of wound alone (Fig. 2C). More accurate predictions may be made by employing, as an additional variable, the ratio of wound width to diameter at stump height, both taken at time of wounding (Fig. 2D). This method of prediction is presented graphically in Figure 3.

If a cruise is made, before callus formation has begun, the dimensions of the wound may be predicted from the amount of charred bark. Studies made after recent fires have shown that the width of scar is approximately equal to the width of charred bark. However, the height of the scar may exceed the height of charred bark by several feet.[9]

The average rate of spread of established rot as determined by the study was 1¼ feet per decade. This information can be used in routine timber marking as a guide in deciding whether to cut or leave a tree with rot already established. However, in judging the future value of a tree, factors other than the extent of rot and its effect on net volume must be considered. Some of these are: (1) The best or most valuable part of the tree is being destroyed by rot; (2) breakage may remove the tree from the stand, (3) degrade from stain and insect attack is often associated with rot.

[9]Toole, E. R., and J. S. McKnight. Fire and the hapless hardwood. Southern Lumberman 191 (2393):181-182, illus. 1955.

Nutrient Responses of Ponderosa Pine Seedlings

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THE GROWTH responses of ponderosa pine (*Pinus ponderosa*) seedlings to various nutrient combinations were studied and compared to those of other kinds of plants grown in the same forest soil. One often finds shrubs (browse), grasses, and broadleaf herbs—particularly legumes (forage)—growing in association with ponderosa pine (timber). The question arises in multiple-use management as to whether fertilizers can be applied to increase the growth of all these plants together, or whether they might be selected to favor the growth of one kind of plant over another, e.g., ponderosa pine over the herbaceous plants, or the reverse. This research gives some leads on the question but more investigation is needed for final answers, particularly tests out in the field.

In California, fertilizers are frequently used on range lands to improve the yield and quality of herbaceous forage and thus to increase animal gains. (*3, 6, 9, 16, 18, 28*). In a laboratory study, Hellmers, Bonner, and Kelleher (*12*) found brush plants to be greatly stimulated by additions of nitrogen. Investigations in progress by Vlamis, Schultz, and Biswell, but not yet published, also show that deerbrush (*Ceanothus integerrimus*) and western mountain mahogany (*Cercocarpus betuloides*) seedlings are greatly increased in growth through fertilization.

For forestry purposes, fertilizers have been used in nurseries to improve planting stock, in areas of transplants to improve early growth and survival, and in older stands to increase growth and seed production and to improve color in Christmas trees.

In forest nurseries, fertilizers are frequently used to improve planting stock (*2, 4, 10, 17, 21, 25, 26, 27*). In most cases the seedlings are stimulated and make more growth if the soils are depleted and deficient in nutrients before the proper kinds and amounts of fertilizers are added. However, there is evidence in some cases that fertilizing in nurseries decreases survival after the seedlings are transplanted into the field, especially if the applications are heavy (*17, 27*).

In plantations, fertilizers have been used in some cases to good advantage on poor soils (*11*), but in other cases competition from herbaceous vegetation increased and the trees were retarded in growth (*19*). If fertilizers are used in plantations, scalping should be done to reduce competition from other vegetation. Cummings (*7*) found no favorable response in height growth from shortleaf pine, white ash, and yellow-poplar seedlings when a complete fertilizer was placed in the mattock holes at the time of planting. However, noteworthy differential responses of these species to the individual nutrients supplied were evidenced. On the other hand, Leyton (*15*) reported significant changes in Sitka spruce from applications of ground mineral phosphate. Scots and Corsican pine also responded but to a lesser degree. Deciduous species appear to be favored more by fertilization than coniferous species.

In 15- to 20-year-old stands height growth of Douglas-fir was doubled as a result of nitrogen fertilization (*8*). In all cases the color of foliage changed to dark green. It was also suggested that color of foliage is a good indicator of the nitrogen status of Douglas-fir, those low in nitrogen being yellowish in color. Nitrogen was supplied successfully to Douglas-fir to improve color and increase needle length in Christmas trees. Nitrogenous fertilizers resulted in a very significant increase in the total number of beech and sugar maple seeds produced (*5*). Fertilizers increased cone production of loblolly pine (*24*) and also of longleaf pine (*1*).

Pot Test Studies

Pot tests have been used for several years in California to evaluate soil nutrient levels and to determine the fertilizer needs of agricultural and rangeland soils (*13*). In these tests about four pounds of soil are weighed into a 6-inch pot, and this serves as a check. A complete fertilizer treatment is then set up containing nitrogen, phosphate, and potash. The nitrogen is added as ammonium nitrate at the rate of 200 lbs. N per acre, the phosphate as monobasic calcium phosphate to supply 300 lbs. P_2O_5 per acre, and the potash as potassium sulfate to furnish 200 lbs. K_2O per acre. In other treatments one of these nutrients at a time is omitted so that the supplying power of the soil for each element is tested in the presence of adequate amounts of the other two. Romaine lettuce and Atlas barley have been found to be sensitive plants for this purpose. They are planted in separate pots and after six weeks of growth the plants are harvested and the dry weights are recorded. The lettuce is planted as seedlings in triplicate pots with one plant per pot, and the barley as seed in duplicate pots to produce five plants per pot.

Pot tests with ponderosa pine seedlings were made out of doors at Berkeley. Ten-inch pots were used, with 5 plants per pot in triplicate. The seedlings were started in flats and transplanted into pots in late June. Nearly one year later, in early June, the plants were measured in height, number of laterals and their maximum length, and stem diameter. They were then clipped at ground level and weighed. The diameter of stem was

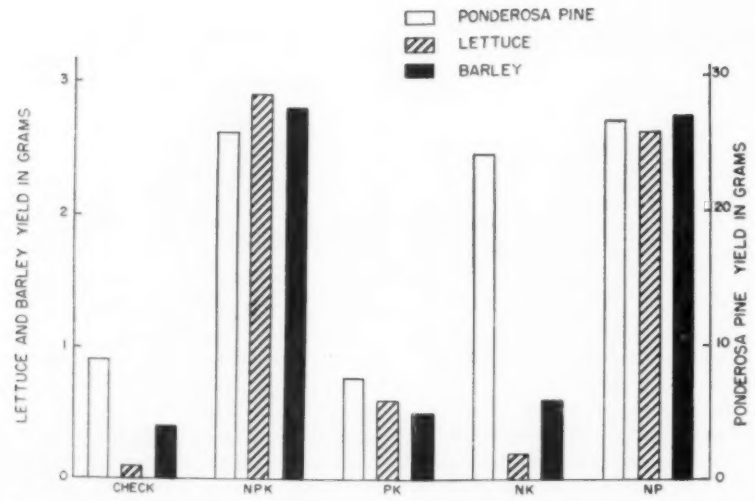

FIG. 1.—Relative growth of ponderosa pine seedlings, lettuce, and barley as determined by the pot test technique.

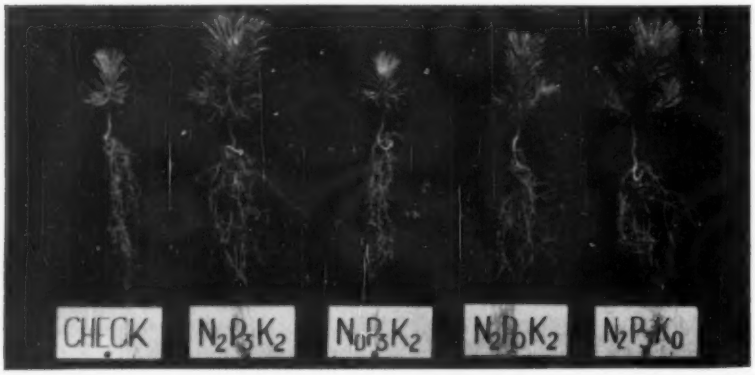

FIG. 2.—One-year-old ponderosa pine seedlings without fertilizer (left) and with nutrients supplied as indicated on the labels.

measured by calipers to the nearest 1/10 mm.

The Holland soil in this study came from the Teaford Forest in the Sierra Nevada, and is a sandy loam formed in place on weathered granitic rocks. It is slightly acid and occurs to a depth of two to three feet with a slight profile development. The acreage of this soil is extensive in the Sierra Nevada foothills, the Coast Range, and the mountains of southern California (*22*). On the Teaford Forest ponderosa pine is dominant, with incense cedar (*Libocedrus decurrens*), sugar pine (*Pinus lambertiana*), and black oak (*Quercus kelloggii*) trees infrequent (*23*). Mariposa manzanita (*Arctostaphylos mariposa*), wedgeleaf ceanothus (*Ceanothus cuneatus*), and deerbrush are the most abundant shrubs. Numerous grasses and leguminous forbs occur in abundance. Elevation is 3,500 ft.; annual precipitation 35 inches.

Results

The results of the experiment can best be shown in Figures 1 and 2 and in Table 1. Comparing the nutrient responses of ponderosa pine seedlings and lettuce and barley, the following relations may be established.

1. In the check treatment which received no fertilizer, the pine seedlings had a relative yield of 35 percent compared to the full treatment (NPK), lettuce about 3 percent, and barley 15 percent.

2. All three species grew vigorously and looked healthy when grown with the complete fertilizer (NPK). The greater weight of pine seedlings was due to increased stem diameter and height growth and to some extent lateral branching, as shown in Table 1. Following dormancy in pine, growth began earlier than in the check treatment.

3. When nitrogen was omitted (PK) all three species were retarded severely and in the following order; barley, lettuce, pine.

4. In the absence of phosphate (NK) the barley and particularly the lettuce, were stunted in growth, whereas the pine seedlings grew almost as well as in the NPK treatment.

5. None of the species showed a significant response to potassium, indicating this element was well supplied by this soil, at least as far as these plants are concerned.

Discussion

It is well known that response to fertilizers varies to some extent with the species. This differential response is especially striking when three growth forms such as grass, lettuce, and coniferous seedlings are compared. It cannot be determined from this study whether the difference in response is due to differential uptake of certain elements by the three kinds of plants or to their inherent ability for getting along without an abundance of these nutrients.

That lettuce shows the greatest response to NPK indicates its suitability as in indicator of small changes in fertility level; while the fact that ponderosa pine is least responsive explains in some measure why fertilization of forest trees is an uncommon practice, with unpredictable results.

On the soil used in this experiment nitrogen deficiency was common to all three plants. A nitrogen deficiency seems to be characteristic of many soils in California (*13*). Growing the plants over only the early stages of growth (entirely vegetative) accentuates the responses to nitrogen relative to phosphorus and potassium. The growing period for lettuce and barley included in the duration of the pot test encompasses much of the life cycle of the plants but in the case

of one-year-old pine seedlings, less than 1 percent of the life span is represented.

The pine seedlings were not sensitive to the phosphorus deficiency experienced by the barley and especially the lettuce plants. Rennie (*20*) has suggested that phosphorus demand (uptake) by pines is 5 percent of that of agricultural crops (oats, grass, potatoes and turnips), 40 percent of that of hardwoods, and half that of other conifers. These values were estimated on a 100-year cropping basis. It is probable that the difference in phosphorus uptake relative to nitrogen uptake between pines and grasses, herbs, or brush accounts for some of the unsuccessful trials using complete fertilizers (*19*). It may be possible, then, on soils low in both nitrogen and phosphorus, to fertilize only with nitrogen in order to decrease the competition for the tree seedlings by grasses and other weedy plants.

The Holland soil is typical of most California soils in regard to potassium content, so on the basis of this study no conclusion can be drawn as to responses of the three kinds of plants to potassium. Comparing mature stands on K-deficient soils, the differences in uptake of that element between pines and other plants are even wider than that for phosphorus but seedlings and young trees have a high potassium demand (*20*).

Whether to fertilize or not is admittedly an economic question. But before its economics can be solved, the cost of the operation must be figured (in terms of dollars per acre, per tree, or per board foot per year, or per pound of browse or forage for game and livestock), and expected returns must be estimated (in terms of increased yields). Data on responses such as have been presented here will help in making the estimates on returns. But information on costs of fertilizing is also needed. For instance, it is important to know which *form* of nitrogen (or other elements) is cheapest and most effective to use, the cost and mechanics of applying commercial fertilizers, whether the soil fertility level can be significantly increased by prescribing burning, the possibility of planting or increasing legumes or nitrogen fixing shrubs, and what other effects of fertilizing might be, such as competition, or change in composition of stand. It is clear, therefore, that more research will be needed to properly evaluate the use of fertilizers in wildland management.

TABLE 1.—MEASUREMENTS OF PONDEROSA PINE SEEDLINGS GROWING ON HOLLAND SOIL FROM THE TEAFORD FOREST WITH AND WITHOUT FERTILIZERS AS INDICATED IN THE TREATMENTS

Treatments	Stem diameter	Height of growing pt.	No. of laterals
	mm	*In.*	*No.*
Check	3.5 ± .1	3.4 ± .1	4.4 ± .2
NPK	4.8 ± .2	5.0 ± .2	4.4 ± .2
PK	3.1 ± .1	3.2 ± .1	3.8 ± .2
NK	4.6 ± .2	5.1 ± .2	4.6 ± .4
NP	4.5 ± .1	5.0 ± .2	4.3 ± .3

Summary

The nutrient responses of ponderosa pine seedlings were studied and compared to those of lettuce and barley growing in the same forest soil. A pot test was used, where a complete fertilizer is compared with a control and subsequent treatments omit one nutrient at a time. This method has been used for several years in California with lettuce and barley to evaluate the soil nutrient level and to determine the fertilizer needs of agricultural and range land soils.

Ponderosa pine seedlings made better growth on unfertilized soil than did either lettuce or barley, but all three species responded vigorously to a complete fertilizer—nitrogen, phosphorus, potassium—treatment.

When nitrogen was omitted all three species were retarded severely. Omitting phosphorus, however, had little effect on the pine but severely depressed lettuce and barley. Leaving out potassium had little or no effect on any species.

These studies show that nitrogen fertilizers alone may be sufficient to greatly increase growth of ponderosa pine seedlings, but that both nitrogen and phosphorus are essential for best growth of all three kinds of plants.

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Soil Conservation Society of America[1]

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THE Soil Conservation Society of America is a national organization of 7,000 members from every state and territory, and 54 other countries. Founded during the early days of World War II, the Society gained momentum after its first annual meeting in Chicago in 1946. The same year several chapters were formed and the *Journal of Soil and Water Conservation*, the Society's official publication, was first issued. Since then the growth in number of members, formation of chapters, and development of programs has been rapid.

The motto of S.C.S.A. outlines the basic purpose of its existence: "To advance the science and art of good land use." Recently the Society restated its philosophy and objectives as follows:

"The Soil Conservation Society of America is dedicated to the promotion and advancement of renewable natural resources conservation to the end that water, soil, grass, forests, and wildlife, in abundance, may be used and enjoyed by mankind forever. The Society is founded on the knowledge and belief that these renewable resources are indispensable to the support and growth of strong prosperous, free nations; that they are interrelated and interdependent—inseparable one from the other; and that their everlasting abundance is dependent on the development, coordination and proficient application of the several arts, sciences, and professions dealing with the promotion of good resource management. Toward the early attainment of this goal the Soil Conservation Society of America pledges the direction of its energies and facilities.

"The objectives of this Society shall be to promote and advance all phases of the science of conservation of soil and water resources; to provide a medium for the exchange of facts, experience, and thoughts; and to represent, advance, and protect the stanards of the basic and allied sciences of soil and water conservation.

"The Soil Conservation Society of America will:

1. "Champion the several arts, sciences and professions that have to do with the conservation of our renewable natural resources in such a manner as to encourage sound formulation of the best possible system of land and water management within land and water capabilities and the principles of multiple use.

2. "Vitalize understanding of the need for conserving our renewable natural resources to the end that conservation becomes an intimate part of the thinking, doing, and living of city and country people alike.

3. "Foster more intensive study of the means by which greater skill in the management of land and water can be developed and put into practice as rapidly as possible.

4. "Strive for early adoption of high ethical standards on the part of all those who are professionally engaged in the furtherance of improved use of land and water.

5. "Work with other conservation agencies and organizations in support of their recognized ressolution and purpose.

6. "Work for the early adoption of a long-range countrywide land and water policy as a guide

[1] *Editor's note.*—This is the third in a series of articles dealing with the organization and objectives of technical societies that should be well known to readers of the JOURNAL OF FORESTRY.

to all agencies, organizations and individuals in their renewable resource conservation activities.

7. "Proclaim worthy achievements by individuals, agencies and organizations that have assisted in the development of sound concepts and practices in land and water use.

8. "Provide a continuing medium for joint consideration of and undertakings in movements designed to foster more effective consideration of renewable natural resources.

9. "Publish and encourage publication of constructive literature that will aid in the development of improved concepts and practices in conservation.

10. "Work for an enlarged research program designed to contribute toward a better understanding of the means by which more effective conservation methods can be developed and put into practice.

11. "Promote rapid development of improved educational programs on conservation in elementary and secondary schools, in colleges and universities, and in adult education fields.

12. "Inspire public recognition of the urgent need for a complete country-wide inventory at the earliest possible date so that more rapid progress may be made in getting more land used within its capabilities.

13. "Strive for rapid understanding of concepts of renewable natural resources as one of the most important steps toward permanent peace . . . and

14. "Augment the concepts of conservation so they include not only better use of soil, water, grass, forest, and wildlife resources in the economy of the world, but æthetic and human values as well."

Membership In S.C.S.A.

Membership consists of Professional members, regular members, student members, sustaining members, honorary members, and fellows.

Any person interested in the science of soil and water conservation is eligible for the member grade. Members shall be those persons whose work or interests have furthered or are furthering soil and water conservation.

Candidates for grade of prosional member must show qualifications and experience in the field of soil and water conservation. They shall be those persons professionally practicing or teaching soil and water conservation, or carrying on research in the field of soil and water conservation, or participating in administration of such work, or those persons previously engaged in the foregoing activities.

Students interested in the science of soil and water conservation are eligible for student grade, providing they can affiliate with a group of student members in an active student chapter or a student branch of a nonstudent chapter. Individual students may affiliate with adult chapters.

Dues for membership are $5 a calendar year. Student membership dues are $1 a year. No additional charge is made for foreign memberships. Individual and institutional sustaining memberships are available for those individuals desiring to support the Society in a more substantial manner.

History

Two meetings marked the beginning of the organization. The first was held in Chicago on November 11, 1941. The second meeting, of a more formal nature, was held in Washington, D. C., February 16, 1943. The war years delayed the Society's founding and it was not until 1946 that the first annual meeting was held in Chicago, the *Journal of Soil and Water Conservation* was first published, and the organization become a reality. Except for clerical assistance, full-time employees were not hired until January 1, 1952 when the Society opened its national office in Des Moines, Iowa. Since that time the Society has had the services of a full-time executive secretary. At present the employment of a full-time editor is pending.

Governing Body

S.C.S.A. is incorporated as a nonprofit organization under the laws of the District of Columbia. It is governed by a national council of nine members and four officers. The officers consist of a president, first and second vice presidents, and treasurer. Five council members are elected to represent an equal number of regions —Western, Great Plains, North Central, Southeastern, and Northeastern. Three council members are elected "at-large" and the immediate past president serves as the ninth member.

Council members are elected for a term of three years while officers hold their positions for one-year terms. Elections are by mail ballot of all members. Nominations are submitted by chapters or by petition. Individual nominations are considered, but not necessarily honored by the nominating committee.

There are 89 chapters at present. Chapters are formed by petition of local members. The Society has no subject matter divisions, but attempts to provide a "common meeting ground" for many specialists in the land use field. Individuals are encouraged to maintain their affilition with specialized societies and groups where they receive subject matter of value in their specialty.

National Meetings

The tenth annual meeting of S.C.S.A. was held on the grounds of the American Baptist Assembly, Green Lake, Wis. September 1955. Over 800 members, wives, and friends attended. The Wisconsin Chapter was host to the meeting. The eleventh annual meeting was held at the Mayo Hotel, Tulsa, Oklahoma, October 15-17, 1956. The six Oklahoma Chapters acted as hosts. A national program committee chairmanned by William J. Endersbee of the Department of the Interior, Washington, D. C., planned the program.

In keeping with the motto—individuals from many agencies and facets of the conservation movement are now members of the

Society, serve on committees, participate in the annual meeting and contribute in many other ways to carrying out its objectives.

Journal of Soil and Water Conservation

The *Journal of Soil and Water Conservation* was first published in July, 1946. Two numbers were issued that year and four numbers each year until 1952 when it became a bi-monthly publication. Walter C. Gumbel of Fairmont, W. Va., soil conservationist for Monongahela Power Company, has served continuously as editor.

A course for the *Journal* was outlined editorially in Volume I, Number 1. It stated in part:

"First we believe the Journal should represent the Soil Conservation Society of America. Secondly, it should present with each succeeding issue, the latest and most authoritive information about the science of soil and water conservation and the principles of sound land use. It should be practical. It should be easy to read. It should be stimulating. It should actively champion the cause of soil and water conservation. It should, above all, be useful."

The editorial continued, "The pages of the Journal will not be a source of delight to the dilettante. On the other hand, we do not subscribe to the notion that professional soil conservationists prefer their reading couched in stilted, scientific jargon, or interspread with the maximum number of tables and graphs. We shall try to keep the Journal on a course that is neither superficial nor pedantic. Let it be constructive and as alive as the science we seek to advance."

It is a tribute to the editor and the editorial board that the *Journal* has succeeded in following the course originally outlined. Ten years later the *Journal* is to be found in the libraries and in the homes of members from the Fiji Islands to Moscow.

The Future

Dr. Firman E. Bear, past president, and retired as head of the Soils Department, Rutgers University, New Brunswick, N. J., recently commented on the future of the S.C.S.A.:

"The Soil Conservation Society of America is unique in that it is designed to be of service to all the people of this nation, whether they belong to it and help pay for the services it renders or not. As long as land in climatic regions that favor plant growth is allowed to be bare, to be eroded by wind and water, and to be put to uses that are not commensurate with the qualities it possesses, there is work for this Society to do.

"Every one of us has a stake in the soil of this country and in what grows on it. And every one of us needs to be better educated as to what can and should be done with the soil to the end that this great land of ours grows ever more beautiful and productive. It is to the accomplishment of these educational and functional ends that the Society is dedicated."

Thus the Soil Conservation Society of America fits into the scheme of conservation organizations.

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Notes

A Simple Test for Viability of Pine Pollen

Numerous workers in forest genetics are handicapped by lack of the laboratory skills or facilities required for the application of certain established genetics techniques. In many instances the effectiveness of such workers could be increased by simplifying the techniques such as that for determining the viability of pine pollen. This note outlines a simplification of previously described methods for testing pollen, less precise than some of them, but found practically effective and reliable by the Texas Forest Service during the past three pollinating seasons.

The necessity for testing viability before using pollen is obvious. Pollen stored for any length of time frequently is weakened or dead. Even fresh pollen may not be viable; in the South, for example, freezing weather about the time of meiosis has rendered many lots useless. It is a waste of time to bag, pollinate, unbag, and protect female flowers, only to discover afterwards that the pollen used was incapable of germination. A relatively rough test of viability is enough to prevent such waste—a fact which makes it possible to simplify testing techniques.

Methods of testing.—Various "best" ways of testing the viability of pine pollen have been described by the authors listed in the bibliography. Most of the methods recommended are both more exacting as to laboratory equipment and procedure than is desirable under practical working conditions, and more refined than is necessary to assure the worker that a given lot of pollen is or is not worth taking up the tree.

Two simplified methods were tried by the Texas Forest Service. In the first, the hanging drop slide was used. The pollen was dispersed in the desired solution for culturing, placed on the slides and incubated in a constant temperature oven at 26°-27° C. for 72 hours. This method yielded satisfactory results. However, it took more time to make the slides than was desirable, and unless care was taken to make a perfect seal, sometimes at the end of the 72 hour period the moisture had completely evaporated.

In the second method (the one being used currently by the Texas Forest Service) two or three cc. of distilled water, or of sucrose medium, are placed in a screw cap vial (8×15 mm.). A small amount of pollen is dropped into the solution, thoroughly shaken, capped and set in the constant temperature oven for 72 hours at 26°-27° C. (about 78°-80° F.). Since this temperature is approximately room temperature, this method can be used without the need for a constant temperature oven. Several times during the 72 hour interval the vials are agitated slightly to redistribute the grains which usually rise to the top of a liquid medium. At the end of the 72 hour period the vial is thoroughly shaken and a drop or two of the dispersed grains placed on a slide and covered with a cover glass. This is then examined under the microscope and a count taken of the germinated grains. Only those are included which have the tube as long as the pollen grain.

Culture media used.—Many media for germinating pollen grains have been tried and reported on. Many of these media employed the use of sugar in the form of sucrose.

To test media suitability, four were employed, i.e., 3 percent, 5 percent and 10 percent sucrose solutions (using distilled water) and a plain distilled water check. It was found that the 5 percent and 3 percent solutions gave nearly identical results and in every case gave a larger percentage viability than the 10 percent sucrose. It was noticed, however, that the percentage germination, as well as pollen tube development, was better in the distilled water than any of the sucrose solutions.

Recently many researchers have become interested in testing pollen. Several of these are using, for their routine tests, a 10 percent sucrose solution as the culture medium. To further check the early results on the comparison of sucrose and distilled water, another set of tests was established. Table 1 shows the results obtained.

Effects of media on contents of pollen tubes.—While examining the

TABLE 1.—GERMINATION OF VARIOUS KINDS OF POLLEN IN DISTILLED WATER AND IN 10 PERCENT SUCROSE SOLUTION

Species and source of pollen	Percent germination	
	Distilled water	10% sucrose
Longleaf—Florida Sandhill A	54	0
Longleaf—Florida Sandhill B	15	0
Longleaf—Louisiana, Wak. 2	36	21
Loblolly—"Lost Pine," Ba1-1, Texas	68	31
Loblolly—"Lost Pine," BA5-2, Texas	68	43
Loblolly—S2PT7 (Superior), Texas	4	0
Slash—Louisiana, Alex.	44	40
Slash—PC(N1), Texas	47	5
Slash—PC(N2), Texas	35	30
Shortleaf × slash hybrid (mix) IFG, Calif.	50	0
Sonderegger (loblolly × longleaf hybrid), Texas	19	5
Japanese red pine—Texas	10	0
Spruce pine—Louisiana	28	18

FIG. 1.—Slash pine pollen grain cultured in sucrose solution. Note large starch granules.

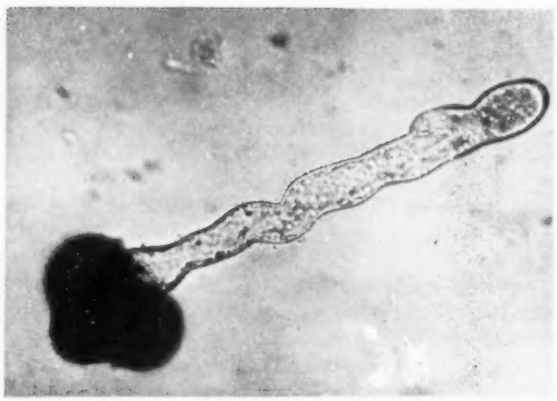

FIG. 2.—Slash pine pollen grain cultured in distilled water. (Same magnification as in Fig. 1.) Note absence of large starch granules.

tubes of the germinated pollen grains under the miscroscope, a consistent difference was noted between the contents of the tubes developing in distilled water and those in sucrose media. All of the pollen grains which were germinated in the sucrose solution had large granules packed very closely in the tube (Fig. 1), while those which had been grown in the distilled water (Fig. 2) had cytoplasm, tube nucleus, and sometimes the cell nucleus (?) visible, but none of the large granules which appeared in the former. The iodine test for starch was applied to both types of tubes; the large granules in those in the sucrose solution became dark blue, typical of a starch reaction, while the tubes in distilled water without any granules did not react. This might be interpreted to mean that those grains which were germinated in the distilled water had to draw on the conversion of their starch into sugar for the energy expended in the growth of the tube and thus none or a few granules would appear in the tube, while on the other hand, the sugar from the nutrient solution was used by the other pollen grains and they did not have to draw on their stored starch for growth of the tube. It was usually found that pollen germinated better percentagewise in distilled water, had longer tubes and had few noticeable starch grains.

Summary

A simple method of testing pollen is described. To get an approximate estimate of germination percent, the simplest test requires merely distilled water, a small vial, a slide, equipment that will enable observation of the germinated pollen grains, and a room temperature of about 75°-80° F. It was found that this method of testing in distilled water was suitable—in fact, superior—in percentage of pollen grain germination and length of pollen tube to testing in a 3, 5, or 10 percent sucrose medium.

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Twelfth Congress of the International Union of Forest Research Organizations

The International Union of Forest Research Organizations held its twelfth congress at Oxford, England, July 7 to 14, 1956. Following the Congress the delegates were offered their choice of eight study tours through various parts of England, Scotland, and Wales. These tours lasted approximately one week.[1]

The International Union of Forest Research Organizations is made up of experiment stations, forestry schools, and other agencies engaged in research in forestry, whether publicly or privately financed. Membership is voluntary and programs adopted by the Union are, for the most part, carried out by the individual research organizations at their own expense, and upon their own decision. The Union's program is not subject to review by the Food and Agricultural Organization of the United Nations. It does, however, cooperate with the Forestry Division of the FAO which provides secretarial services and certain funds for specific projects.

The governing body, the International Council, is convened at each Congress. It is made up of one representative of each nation included in the membership. This Council is elected anew at each Congress. A permanent committee, on which the U. S. A. has two members, functions for the Council between meeting dates and also prepares material for Council action. The enlarged committee which includes the permanent committee and the subject matter division chairmen, may also be called in session at Congresses and during interims between them.

The technical divisions include forest influences, protection growth, yield, management, economics, silvics, silviculture, genetics, work studies, forest products, and forest statistics. Each division has a chairman who has major responsibility for organizing the programs in his subject matter field for the Congresses of the Union. Papers may be submitted voluntarily or requested by the chairman. A substantial amount of the work of the Union is carried on by the individual divisions.

Major responsibilities for a Congress fall to the host country which appoints an organizing committee, a reception committee, and such other committees as may be needed for the smooth operation of the Congress.

A unique feature of this conference was the housing of the delegates in two of the Oxford University colleges, Keeble and St. John's. Delegates were lodged in student rooms and meals were served in the college dining room. The friendly atmosphere of the college with its lounging rooms, well kept lawns and gardens, and food service at long tables did much to promote friendly interchange among the various delegates.

Working sessions were held in the Imperial Forestry Institute and nearby buildings. All papers and reports were mimeographed in advance of the meeting and distributed to the delegates. No papers were read formally at the meeting, but summaries were presented and a discussion period followed. The official languages of the Congress were English, French, and German. As the majority of the delegates seemed to understand at least two languages, translation of discussion was not always required. The total number of delegates was approximately 300 with 40 different countries represented. The United States was represented by eight delegates; three from the U. S. Forest Service, four from the forestry schools, and one from a state research forest.

The Union has special working parties to deal with the following activities: the preparation of a bibliography of forestry literature, the nomenclature of forest trees, the international provenance experiments, multilingual forest terminology and the preparation of a multilingual dictionary. The individual divisions usually select a special topic for study between Congresses to report at the next Congress. The papers delivered at the Congress, together with the business transacted, will be published in the proceedings.

It was decided to hold the next Congress in Austria in the year 1960. The new president of the International Union is Mr. J. Macdonald, director of research and education for the Forestry Commission of Great Britain.

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Chemical Debarking of Southern Trees[1]

An investigation was conducted near State College, Mississippi during 1954 and 1955, to determine the practicality of chemical debarking in the South. The effectiveness of the process in producing rapid kill, promoting bark separation, encouraging seasoning, and retarding biological deterioration and sprouting was studied with respect to time or treatment and tree size and species.

A 40 percent aqueous solution of sodium arsenite was applied during March, May, June, and August of 1954, to bark-type girdles formed on trees of red oak, white oak, hickory, sweetgum, and shortleaf and loblolly pine. Periodic inspections were conducted to determine the speed of kill of the poisoned trees and the extent of bark loosening and seasoning effected by the treatment. Concurrent data were obtained on the degree of insect and fungal attack

[1]Abstract of a thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Forestry at Alabama Polytechnic Institute.

by judging according to a predetermined rating system the damage sustained by trees of each species. The effect of sodium arsenite on sprouting was ascertained by counting the number of sprouts on each stem and measuring the height of the tallest sprout.

A rapid kill and the development of favorable peeling conditions were produced by the treatment in all species except hickory. The average moisture content of the poisoned trees was reduced to approximately 45 percent within four months after treatment during March, May, and June, and to approximately 60 percent after the same interval following treatment in August. Insect and fungal damage attained serious proportions regardless of the time of treatment and greatly reduced the merchantability of trees of all species. Trees girdled and poisoned with sodium arsenite sprouted more prolifically than did those which were girdled only.

Subsequent work by K. C. Birdsall, based on limited replications of the same design and located immediately adjacent to the original field plots, indicates substantially less fungal and insectile deterioration in the pines which were treated in December, January, and February 1955. This did not hold true for post oak or the red oaks. Bark loosening did not become apparent until the onset of the growing season; however, peelability was entirely satisfactory.

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Juvenile Development of a Cottonwood Stand in Central Oklahoma[1]

In 1946, a rectangular 1/8 acre plot was set up in a naturally established seedling stand of cottonwood in western Lincoln County, Oklahoma.

Initially, this stand contained about a 50-50 representation of cottonwood and black willow, and there were many thousands of seedlings per acre. Seedlings were two and three years old at the time of plot establishment.

A weeding in 1946 removed all willow stems and reduced the cottonwood stocking to 1,912 well spaced stems per acre. The 10-year development of the weeded stand is shown in Table 1.

Most willow stumps produced sprouts in the spring of 1947, but they were definitely suppressed by the overtopping cottonwood. All were dead by 1950. In the surrounding unweeded stand, willow constitutes 7 percent of the total living stems at stand age 12. The presence of the living willows has reduced, to some extent, the number and development of the more desirable cottonwood. The early weeding appears desirable in this common mixture.

Invasion of the entire stand by box elder, ash, and mulberry is quite evident at stand age 12. A second weeding needs to be made sometime between stand age 10 and 15, while the unwanted stems are yet small.

Volume in cubic feet in trees 6 inches d.b.h. and larger, measured to a 4-inch top, begins to appear at stand age 10. The 1953 and 1955 volume records are shown in Table 2.

Basal area development in the juvenile stand is quite irregular, as indicated in the 10-year record. The rate of increase fell from age 7 to 10, but rose again from age 10 to 12. This occurred in spite of the fact that since 1951 an average an-

[1]Adapted from progress report, Project Number 870, "Stand Development and Yield, of Cottonwood in Central Oklahoma," Oklahoma Agricultural Experiment Station.

TABLE 1.—THE 10-YEAR RECORD OF THE 1/8 ACRE PLOT

Age of stand	D.b.h. in inches 1	2	3	4	5	6	7	8	9	10	Total No.	Basal area	Average diameter
	Number of trees per acre											*Sq. ft*	*Inches*
3 (1946)	1,520	336	56								1,912	19.3	1.35
4	752	656	240	24							1,672	32.8	1.90
5	384	608	264	120	8						1,384	40.1	2.30
6	192	576	296	184	64	8					1,320	54.6	2.75
7	96	432	232	216	96	56					1,128	63.9	3.22
8	16	240	280	152	144	64	16				912	68.7	3.71
9		88	200	152	112	88	56	8			704	75.2	4.45
10		56	200	104	136	96	48	16	8		664	79.3	4.67
11													
12 (1955)			104	88	136	104	72	32	24	8	568	97.0	5.6

TABLE 2.—VOLUMES IN TREES 6 INCHES AND OVER TO A 4-INCH TOP OUTSIDE BARK

Diameter	Stand 10 years old		Stand 12 years old	
	Trees per acre	Volume per acre	Trees per acre	Volume per acre
	Number	*Cu. ft.*	*Number*	*Cu. ft.*
6	96	292.8	104	317.2
7	48	233.3	72	349.9
8	16	113.3	32	226.6
9	8	71.7	24	215.0
10			8	111.6
Total	168	711.1	240	1,220.3

nual 5.35 inches deficit in precipitation, on an average annual 33 inches, is shown by the two nearest reporting weather stations. The greatest deficit was 15.39 inches in 1954. Annual mortality is also quite irregular, and appears not to be explained by weather factors alone.

The tendency toward group-wise arrangement, a well known characteristic of cottonwood, begins to show clearly as stands reach 9 to 12 years of age. This project was expanded in 1955 to provide for plot replications and thinning studies.

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Damage to Longleaf Pine Seedlings by Cotton Rats

Though the cotton rat (*Sigmodon hispidus*) has attacked pines in many parts of the Lower Coastal Plain, it is not generally recognized as a serious hazard. Recent observations in central Louisiana, however, show that this rodent can do severe damage when it finds a favorable habitat. Like the woods hog, the cotton rat seems partial to longleaf, but it attacks other species occasionally.

A heavy rat infestation was discovered early in May 1956 in a 400-acre stand of longleaf pine (*Pinus palustris* Mill.) near Oakdale, Louisiana. The seedlings were 18 to 30 months old, having been established by direct-seeding in November of 1953 and 1954. Stocking per acre varied from 1,000 to 3,000 trees, very few of which had yet begun height growth. The entire area had been protected from fire and cattle grazing for more than 3 years, so that it was covered with a heavy rough, mainly of blue-stem grasses. Small brush piles, left from a hardwood control operation, were scattered over most of the tract.

The type of damage varied with the size of the seedlings. Those ⅓-inch or less in diameter were generally bitten off at or just below the ground line; nipped-off seedlings were especially numerous close to the brush piles. Larger seedlings were girdled, usually for a third to half of their circumference. Shallow digging was noted around many of the injured seedlings, but it was not accompanied by the deeper rooting that typifies hog damage. The girdles were very narrow, and some clearly showed the marks of rodent teeth.

Though the rough and the brush piles made the entire 400 acres a good habitat for the rat, the infestation was not uniform. On some areas of 10 or 15 acres nearly half the seedlings were damaged, while on others nearly all escaped. On the average, 10 percent of the longleaf seedlings were either killed or injured so seriously that their recovery is in doubt. No attacks were noted on natural Sonderegger (*P.* × *sondereggeri* H. H. Chapm.) seedlings growing on the area, nor on a young slash pine (*P. elliottii* Engelm.) plantation in an adjacent rough. However, occasional attacks have been reported on slash and loblolly pine (*P. taeda* L.) seedlings, mainly those less than 2 feet tall.

The inconspicuous nature of cotton-rat infestation suggests the need for periodic examinations of longleaf seedlings growing in a heavy rough. On casual observation, the dead seedlings look no different from those killed by the brown spot disease, and the partially girdled trees may show no change in foliage color at all. Examination of the root collars, however, will usually clear up doubts. Other signs of the rat are narrow runways through the grass—smaller than the paths made by armadillos and often containing pale greenish-yellow droppings and small piles of shredded grass.

The rat itself is 10 or 12 inches long, buff and black on the back and white below. It has a rough, grizzled appearance, and the ears are nearly hidden in the fur. The tail is broad and stubby, and covered with fine hairs.

Suspicions of the rat's presence can be confirmed by setting a few snap traps baited with peanut butter, pine seed, or pieces of apple, carrot, or sweet potato.

If the infestation is found in late fall or winter, the most practical measure in longleaf stands is prescribed burning; the rats will leave if their habitat is destroyed. During other seasons, poisoned baits give the most satisfactory control. Recommendations and assistance on the use of baits can be obtained from the Regional Office, U. S. Fish and Wildlife Service, Atlanta, Georgia.

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Reviews

Grasslands of the Great Plains Their Nature and Use

J. E. Weaver and F. W. Albertson. 395 pp. Illus. Johnsen Publishing Co., Lincoln, Nebr. 1956. $6.50.

In these days of rapid manipulation of land from trees to grass, grass to trees, trees and grass to cultivation, and from cultivation to trees or grass or both, it behooves forest and range managers to know the natural workings of native grassland. This book and its companion volume, Weaver's *North American Prairie*, will bring the forester and range man up to date on the ecology of the great expanse of North American grassland in the interior of the continent.

Time was when our extensive central grassland was thought of as containing two major divisions: "tall grass prairie" in the eastern portion, and "short grass plains" in the western portion. But close ecological analysis revealed a more complex overall pattern. The grassland formation has three well-defined groups, known as tall grasses (such as big bluestem), mid grasses (such as little bluestem, needlegrass, and western wheatgrass), and short grasses (such as blue grama and buffalo grass).

These three groups of grasses and a large number of forbs give the grassland its distinctive unity, character, and aspect. And instead of two divisions of the central grassland, there are four: (1) the subclimax prairie, lying within the climatic zone along the broad western margin of the deciduous forest and characterized by tall grasses and mid grasses, (2) the true prairie, lying just west of subclimax prairie and characterized by mid grasses, (3) the mixed prairie, occupying the Great Plains west of the true prairie, and characterized by both mid grasses and short grasses, and (4) the short-grass disclimax, generally occupying the more westerly or drier portions of the Great Plains, and characterized by short grasses, with scattered mid grasses. The evidence is that the dominance of the short grasses is primarily a result of overgrazing.

This book is concerned with the last two associations listed above. It is essentially a summarization and reinterpretation of results previously published by Weaver and his coworkers and students. As such, it is a highly valuable compendium of the ecology of the Great Plains. The book has 22 chapters, the first of which recounts the origin and extent of the Great Plains and the Mixed Prairie. Three chapters deal with the individual communities and characteristic plant species.

"Plains plants underground" deals with plant root systems, concluding that of 36 mixed-prairie species studied, 61 percent were both fairly deep rooted and well adapted to absorb water even where only the surface soil was moist.

Accurate historical detail is available for some enterprising author to write a novel, simply by placing people in the western Kansas setting, and following both people and vegetation through the great drought. There is also an absorbing account of recovery after the drought in western Nebraska and portions of South Dakota, Wyoming, Colorado, and Oklahoma.

Chapters which are mainly descriptive deal with the mixed prairie, area by area, including Nebraska, Colorado, Oklahoma, Texas (by B. W. Allred), New Mexico (by Arnold Heerwagen), Northern Great Plains, and Canada. Generalized type maps based on SCS field surveys are reproduced for Texas and New Mexico.

Water relations and response to grazing pressure of the mixed prairie are considered, as are also the effects of selected biotic factors such as rodents and insects.

THIS DISPLAY stressing the importance of southern hardwood timber was exhibited in the Peabody Hotel, Memphis, Tennessee, during the 56th annual meeting of the Society of American Foresters, October 14-17. The story of hardwoods in the South is forcefully and interestingly told by photographs of good hardwood forests and a brilliantly colored map, each state being fashioned of veneer from a different kind of hardwood tree. Studying the display are (left to right) Monty Payne, chairman of the Forestry Committee of Mississippi Delta Council; J. A. Putnam of the Delta Research Center, U. S. Forest Service; W. W. May, forestry agent, Illinois Central Railroad; W. W. Dannenberg, woodland superintendent, U. S. Gypsum Company; Walt Guyer, chief forester, Anderson-Tully Company; and little Miss Guyer.

The list of common and scientific plant names is useful, and the bibliography will be a time saver for those interested in following up on previously published details.

Those of us who have anything to do with grass are fortunate to have this book for study and reference.

ROBERT S. CAMPBELL
Southern Forest Experiment Station

The Handbook of Wilderness Travel

By George and Iris Wells. 306 pp. Harper and Brothers, New York. 1956. $4.

People who take trips into wild country will agree that, among other things, the difference between misery and pleasure hinges importantly on how one is informed and equipped, where he goes and who, if anybody, he may see. The authors of this handbook consider these subjects successively in the three parts of the book. Part I takes up means of travel, kinds of wild lands available, and necessary preparations. Part II consists of an unusually complete directory of "wilderness areas" alphabetically by states. Part III lists, state-by-state, outdoor clubs in which membership is frequently desirable.

The quotes above are used advisedly for these seasoned wilderness travellers are no purists. A wilderness to them is almost any area devoid of roads and human habitation even though a railroad locomotive may be heard on occasion. The entire gamut, however, is run from a one-day hiking trip along an abandoned canal in Delaware to the Bob Marshall wilderess area of almost a million acres in Montana. Kansas is the only state in which the authors find no "wilderness."

Of the various travel methods, the back-packing trip is given the most attention, and as described and recommended it can be anything but a physical ordeal. Gradual acquaintance with the wilderness is wisely advised; dozens of practical hints on clothing, food, and equipment are included; estimates of expense are given; and, at the risk of outright advertising, one finds a considerable directory of food and equipment suppliers.

Out of their own experience on their first canoe trip, made "with the typical aplomb of the ignorant," the amateur is cautioned to try waters subject to little risk, and yet the authors stoutly maintain that there is a "great variety" of canoeing waters. A photograph on the jacket shows the couple canoeing in a jungle water way on the Ocala National Forest both wearing duck bill caps although they say earlier that "a hat with air space is preferable to a cap of any sort."

The American Forestry Association with its Trail Rider service and the Sierra Club come in for mention in the pack trip chapter, in which the sort of trip where the traveller walks and animals are used only for packing food and equipment is discussed.

The float trip, while characteristic of the Ozark country, finds its peak of excitement in the wild desert canyons of the West. Such a trip may be arranged on your own, according to the authors, but only after gaining experience.

Other kinds of wilderness travel described include the use of jeeps, airplanes, outboard cruisers, swamp buggies, air boats, and dog sleds. Here again one feels that the authors are realists. They worry little about what mechanized travel can do to wilderness resources. The wilderness purists will get quite a shock at the emphasis on the usefulness of the jeep for desert, mountain, and beach travel.

A chapter on organized trails gives credit rightly to the Appalachian Trail as the most famous of these. The Pacific Crest Trailway, it seems to this reviewer, gets more credit than it deserves in the matter of organization, and it may be stretching things a bit to say that "good markings, firm footing and relatively easy grades make a trip on this trail hardly more of a hardship than a stroll through a city park." Other organized trails mentioned are the California State Trail, almost 1000 miles of which have been built or are under construction, and the Long Trail in Vermont inaugurated nearly a half-century ago by the Green Mountain Club.

Safety and ethics naturally come in for treatment with the optimistic suggestion of the code: "Be so clean a camper that no one can tell you have been this way."

Laborious research and wide travel have gone into the preparation of this handbook. It is accurate, helpful, and interesting.

SHIRLEY W. ALLEN
Michigan Conservation Commission

Statistical Methods

By George W. Snedecor. 534 pp. Iowa State College Press, Ames, Iowa. 1956. $7.50.

Scarcely any book on statistics has been as popular among nonstatisticians as the 1946 (4th) edition of Snedecor's classic. Consequently, any review of the new 5th edition should logically concern itself with changes and additions, since the scope of the former version is familiar to most potential readers.

The basic organization of the new edition is the same, and many of the same numerical problems have been employed. It is more clearly printed on better paper, and has nearly 50 more pages of text (including some new tables). Best of all, the new last chapter (contributed by W. G. Cochran) is a vastly improved and simplified exposition of sampling methods. It should be required reading for all foresters (especially those whose school days are far behind them) unless they are already familiar with probability sampling (including area sampling), systematic sampling, stratified sampling with unequal sampling fractions, multistage sampling, cluster sampling, optimum allocation of samples, and ratio, regression, or random sample estimates, as well as the standard errors of each.

There are other improvements. The new Chapter 2 handles confidence intervals and null hypotheses with greater clarity, and has added a section on fiducial limits of

variance estimates. The new Chapter 5 has included some quick approximate range and rank tests.

Chapter 10 now gives a good early warning against the popular but invalid comparisons of all possible differences between means with an LSD involving t, and explains Tukey's studentized range (Q) technique for coping with this situation. The (Q) table is also useful in designing experiments to detect specified differences. Other new material in Chapter 10 includes an exposition of two fundamentally different models in the analysis of variance, and an approximate (F') test for difference between means when variances are heterogeneous.

Much of the subsequent material has been rearranged. Transformations have been shifted from old Chapter 16 to Chapter 11, and Tukey's additivity test has been incorporated. Chapter 12 brings together material from several old chapters, and in addition, is more concerned with underlying theory and assumptions than formerly. Also, it discusses Kempthorne's interesting R x C x 2 alternative to chi-square analysis—an analysis of variance using arc-sine transformation of percents with a parametric error term (always 821, with infinite degrees of freedom). An approximate (F') test using composite mean squares is also explained.

Although Chapters 13-15 (on covariance and regression) have been slightly revamped so as to clarify the mechanics of computation, the reviewer had hoped that more attention would be paid to decomposition of the sums of squares into meaningful components. He was also disappointed to note that discriminant analysis has been completely omitted, along with probit and logit analysis. However, he agrees that such omitted subjects as sequential analysis and confounding probably have no place in an elementary text.

Casual spot checking indicates somewhat more typographic errors than in the earlier edition. Rather obvious numerical or algebraic blunders appear on pages 30, 60, 127, 254, and 517, while less serious orthographic lapses were noted on pages 34, 159, 264, 273, and 510. Considering the difficulty of setting type and correcting proof where symbology is complicated, one cannot fault the book too heavily on this score, however.

All in all, Snedecor's 1956 edition will compete with Goulden's 1952 text for a place on the shelf of all but the most sophisticated or the most bucolic foresters.

L. R. GROSENBAUGH
Southern Forest Experiment Station

Soil Conservation

By Sellers G. Archer. 305 pp. Illus. University of Oklahoma Press, Norman, Okla. 1956. $3.75.

Mr. Archer has written a comprehensive text on the subject of soil conservation. He divides his subject into eight parts. In these he relates conservation in its broadest aspect to the basic resource, the soil.

His treatment of the subject directs the text principally at the farmer. He reviews the history of conservation and describes the land capability concept. He then goes into the problems and details which need to be considered in developing a conservation plan.

Chapters 3 to 6 discuss in considerable detail the treatment of land for such broad purposes as clean-tilled crops, grassland, farm woodland, and wildlife production. The last two chapters deal with the farmer's interest in special conservation programs and sources of assistance for the landowner seeking help from conservation programs. Many questions which may confront the landowner are answered in detail. Numerous illustrations and tables will help the reader to understand the solution which a technician may propose for the treatment of land.

The organization of the material suggests a number of possible uses for this work; Vo-Ag classes, Future Farmer groups, and 4-H Clubs may profitably use it in its entirety.

It would seem to have considerable possibility as a text for a generalized course in soil conservation and should be required reading for agriculturists training to work in fields related to conservation. A trial in using it for reference reading as a part of the beginning training of new soil conservationists is being made.

A landowner anywhere in the country who is thoroughly familiar with the text will get much more out of the several sources of help available to him than one who has not had the chance to see this book. It is not a "do-it-yourself" text, and apparently was not intended in that way, although it goes into sufficient detail in many places that some readers may be able to use it to that end. It contains an extensive bibliography and a very complete index.

Professional soil conservationists will do well to be familiar with it.

The author is a conservationist who has first-hand knowledge of the intricate problems in the vast agricultural area in the middle of the country. He has familiarized himself with the variations in these problems that exist because of climatic differences.

He is co-author of another book on the use of grass in agriculture. The fact that the book is based on experience obtained in the central part of the country in no way circumscribes its usefulness in other areas.

RICHARD M. MAY
Soil Conservation Service

Publications of Interest

The need for safe practices in tree preservation work led to the writing of the booklet, *Safety for Tree Workers*, as Bulletin No. 2 in the Tree Preservation series originally written for employees of the National Park Service. Listed in the booklet are safety rules for such work as climbing, pruning, transportation, and spraying.

Originally prepared by the late A. Robert Thompson in 1937, this new issue of the bulletin contains revisions and additions. For sale by the Superintendent of Documents, Washington, D. C., at $.20 per copy.

Current Literature

Compiled by MARTHA MEELIG, *Librarian, State University of New York College of Forestry*
Range Management Section Compiled by Division of Bibliography, Library, U. S. Department of Agriculture

General

Common Exotic Trees of South Florida. By M. F. Barrett. 414 pp. Illus. Univ. of Florida Press, Gainesville. 1956. $8.50.

Pork, Molasses and Timber. By Louis Eaton. Exposition Press, Inc., 386 4th Ave., New York. 1956. $2.50.

Treasury of Trees. By H. L. Edlin and M. Nimmo. 318 pp. Illus. Countrygoer Books, Ltd., Manchester, England. 1956. 75/-.

Conservation

Water for America: the Story of Water Conservation. By E. H. Graham and W. R. Van Dersal. 112 pp. Illus. Oxford Univ. Press, New York 11. 1956. $3.50. Ages 12 and up.

Forest Management

Estimation of Volume of Forked Trees in Exotic Coniferous Stands in New Zealand. By G. Duff. 10 pp. New Zealand Forest Serv., Forest Research Inst., Wellington, Box 894. 1956. Research Notes No. 6.

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Forest Products

Buying Practices of Wood-Using Industries in New Hampshire. By L. C. Swain and O. P. Wallace. 11 pp. Illus. Univ. of New Hampshire Agric. Expt. Sta., Durham. 1956. Sta. Bul. No. 433.

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The Distribution and Volume of Hickory Timber. By J. W. Cruikshank and J. D. McCormack. 12 pp. Illus. Hickory Task Force in coop. with Southeastern Forest Expt. Sta., Asheville, N. C. 1956. Report No. 5.

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Protection

Chemical Control of the Fir Engraver. By R. H. Nagel. 3 pp. Rocky Mt. Forest and Range Expt. Sta., Fort Collins, Colo. 1956. Research Notes No. 23. Mimeog.

Dosage Colorimétrique du Bore dans le Bois de Limba (Terminalia Superba) Traité en Vue de la Preservation Contre les Lyctus. By J. Nicolle and O. Bressey. 3 pp. Centre Technique Forestier Tropical, Nogent-sur-Marne, France. 1956? Note Technique No. 1.

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The Pitch Twig Moth and its Occurrence in Ohio. By W. E. Miller and R. B. Neiswander. 24 pp. Illus. Ohio Agric. Expt. Sta., Wooster, Ohio. 1956. Research Bul. No. 779.

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Grazing Capacity of Wiregrass-Pine Ranges of Georgia. By L. K. Halls, O. M. Hale, and B. L. Southwell. 38 pp., illus. Georgia Agric. Expt. Sta., Athens. Tech. Bul. (n.s.) 2. May 1956.

99 Range Forage Plants of the Canadian Prairies. By J. B. Campbell, K. F. Best and A. C. Budd. 99 p., illus. Canad. Dept. of Agriculture. Publication 964. June 1956.

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Dendroclimatic Changes in Semiarid America. By Edmund Schulman. 142 pp. Illus. Univ. of Arizona Press, Tucson. 1956. $3.00.

Genetics in Silviculture. By C. S. Larsen, trans. by M. C. Anderson. 224 pp. Illus. Oliver & Boyd, Edinburgh. 1956. 30s.

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Society Affairs

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1956-1957

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The President's Column

DEWITT NELSON

This is the start of a new year. It is a time when we may profitably pause and take stock of things, as a merchant inventories his shelves and balances his books.

In the holiday season that is past how many of us who read the newspapers must have quietly thanked God that we live in a land where "Good Will on Earth" is not only spoken but practiced, and freedom is an accepted principle of life! We have not only cause for deep thanks but reason to work with greater energy.

The Northern and Southern California Sections have recently held their annual winter meetings — meetings which reported many new techniques and methods of tackling some of our most difficult problems in the fields of forest management and forest protection. How rapidly can we develop and put into practice these new ideas? Remember the old saying? "A man's age is determined by his ability to accept a new idea."

In spite of the calendar which designates December as a winter month, two tragic fires in southern California claimed the lives of 12 men. Three forest officers, according to the Coroner's report, gave their lives in an effort to save their crew men. Every year there are many unsung heroes in the woods and each year the gold-star flag grows larger. What those men did in the finest tradition of the service must never be forgotten.

At this season of the year I want to pay particular tribute to the thousands of foresters who rarely get their names in print but who are the men in the field doing the day-to-day job. The men with the cruisers stick and the marking gun, the men who ride the saddle in the high country and the jeep in the back woods, and the men who hit the fire-line and take their chances with the whims of weather. These are the men who are producing tomorrow's forests, ranges, and watersheds. I also pay tribute to the wives who must remain at home. Theirs is the tougher job for they do not know what the situation is, nor do they have the excitement to keep them buoyed-up. On the wife depends a man's success; for his spirit, enthusiasm and morale are a direct reflection of hers.

As we face the New Year I urge that we all do a bit of reflecting and contemplating. In a recent radio discussion, Clifton Fadiman mentioned, "The opportunity for reflection but without the ability for it." How many of us lack that ability? With the growing pressures on our time and energies, I am afraid many of us are putting out "spot fires" rather than tackling the major blaze. I believe a New Year's resolution for more reflection and examination of the entire job instead of just parts of it would be worth while. Hope I can make it.

To you all a Happy and Successful 1957.

DeWitt Nelson

Report of Officers, Staff, Committees, Division, and Council Meetings

Fifty-sixth Annual Meeting, Society of American Foresters

Memphis, Tennessee, October 15-17, 1956

Report of the President

DeWitt Nelson

On behalf of the Council and Staff of the Society of American Foresters I am proud to present the President's Report for 1956. It is my privilege to report to the Society on our stewardship for the past year. In doing so, no one realizes better than I that our progress is primarily due to the devoted and loyal services given the Society by our many national, Section, and Chapter committees. They are the men who have done the work, who have developed new ideas, and translated those ideas into action. They are the men who have continued to build the traditions of the forestry profession. Therefore, humbly and with pride in our profession I express my appreciation to the literally hundreds of men who have contributed so much over the years.

I want to pay particular tribute to the men and women of the Kentucky-Tennessee Section for the remarkable job they have done in planning and arranging for this meeting here in Memphis. I should like to mention them all but refer you to page 2 of your program for the list of those fine people who assisted the general chairman, Russell Stadelman. Great credit must also go to the chairman of the eleven subject matter Divisions who have arranged stimulating meetings for the extension and exchange of professional knowledge.

We realize that our time is filled to overflowing but we believe that these annual meetings offer the best possible medium of communication. All of the papers presented here will become a part of the forestry literature when published in the Proceedings of the meeting.

During the past year I have had the privilege of meeting with 7 of our Sections and of talking with members or groups from every Section. While we each have problems and interests that are peculiar to our geographical location I have been interested in noting the basic similarity of these problems as they exist across the nation. We may be dealing with different climatic conditions, timber types, and with people of differing backgrounds and interests but I find that there is relatively little difference in the fundamental problems and the common goals for which we are striving. As different timber types respond to different silvicultural treatments, so do different people respond to different approaches. Therefore if we are to develop and maintain a sound forestry economy with its many facets of timber, water, recreation, wildlife, and forage, we must never forget that people and their understanding is as important as the trees. Only if there is understanding by the people can we hope to reach and maintain an adequate production of forests for the many uses they provide.

The chairmen of our national committees will report in detail on their activities during the past year. However, I want to make a general report on some of the work accomplished. Each Council picks up the unfinished projects of previous Councils and carries them on to completion.

For example, the *Forestry Handbook* was initiated in 1947 when Shirley Allen was president. Each of the succeeding Councils continued to work on this project which was completed with its publication in September 1955, when E. L. Demmon was president. The *Forestry Handbook* continues to sell well. The number of copies that have been sold represent an exceptionally good record for a book priced at $15. The Society made a cash investment of $10,000 in the preparation of this volume. This amount will be returned to the Society in full from royalties on the book. It has been a sound investment and has given the men in the field a valuable professional tool.

During the current year the Society published its long awaited Directory of Members. This directory has many valuable uses and has been enthusiastically received by the membership. For this project I want to give special credit to Miss Audrey Warren, our business manager. She did this job, in large part, single handedly and completed it just before being stricken with a heart attack. I know I express the pleasure of the Society in welcoming her back on the job, for she has been an important member of our staff since the Society opened its full-time offices in 1928, when Ovid M. Butler was president.

The quarterly journal *Forest Science* has proven successful and popular. Now in its second year we have 1,145 subscribers. To Dr. Stephen H. Spurr of the University of Michigan goes much credit for his outstanding work as editor of this scientific professional publication.

The JOURNAL OF FORESTRY now goes monthly to more than 12,000 readers; it has the largest circulation of any professional forestry journal in the world. We are indebted to Art Meyer, the editor, our eleven associate editors, and Lloyd Thorpe, our advertising representative for the splendid work they are doing. There is a continuing need for improving the variety of articles in the JOURNAL to broaden reader interests. For specific discussion of this problem I refer to my column on page 628 of the October issue.

I have enjoyed writing a monthly column for the JOURNAL, even though the months frequently seem to be very close together. In these columns I have endeavored to stimulate thinking on problems that I believe foresters, as individuals and as groups, must face and solve. I hope that my efforts may, in some small way, be of value to the profession and the nation.

During the past month two new publications have come off the press. First, *Forestry as a Profession*. This is a professional guidance bulletin prepared by our editor, Arthur B. Meyer. There is a growing need for such a publication to be available to young men who are in the process of selecting a career. The competition for trained

The annual Society Affairs session was held in the Peabody Hotel in Memphis, Tennessee, on the afternoon of October 15. President DeWitt Nelson presided.

On October 14 the Council met, preceding the opening of the Annual Meeting.

The reports which follow indicate the scope of the activities of the Society in behalf of the profession, and the members are urged to read them.

men in all fields is extremely keen and the Society has a responsibility to assist the colleges, the industry, and the public agencies in recruiting high caliber men in the forestry profession. In addition to this I know of some Sections which are preparing career information bulletins to use in their particular areas.

The second publication just off the press is *Forest Practices Developments in the United States, 1940 to 1955*, by the Committee on Forest Practices, Dr. Kenneth P. Davis chairman. If you want to learn what other states are doing in forest practices and how dynamic is the growth of forestry, you will want to secure a copy of this report.

I salute the Section membership committees, for it is through their efforts that we feel the heart throb of the Society. To them goes the credit for our 11,108 members as of October 10, 1956. To them goes the credit for the reinstatement of many old-timers and the addition of the new blood of hundreds of young men. The Council committee on membership, made up of Vaux, Allen, and Heacox, have been most efficient in processing membership applications.

Today the Society is 56 years old. Fifty years ago (1906) we had a total membership of 140 people—95 Active Members, 44 Associate Members and one Honorary Member. President Theodore Roosevelt and Secretary of Agriculture James Wilson were among the Associate Members. Today we tally over 11,000 members.

In 1906 Gifford Pinchot was president of the Society and William L. Hall was treasurer. Mr. Hall, one of the charter members of the Society, and recipient of the Pinchot Medal in 1954, is attending the meeting today.

There is a growing interest in many states for the ultimate enactment of legislation for state registration of foresters. Julius Kahn, chairman of this committee, has turned in a scholarly report on this subject. It is too long to read at this meeting but it will be published in full. Archie Patterson will give a summary report on this subject.

At its meeting last February the Council took several actions on which I should report to you.

After a two year study the Council proposes to amend the Constitutional provisions for the election of Fellows. The proposal is to broaden the electorate in order to give better opportunity for recognition of outstanding achievement by members of the Society. No longer is it possible for all foresters to know each other and to recognize the outstanding contributions that many of the profession are making. In order to adequately recognize these contributions we believe it is necessary and desirable to broaden the method of selecting Fellows. This will be placed before the electorate for vote in the near future.

In 1954, the Society received a grant of $10,000 from an anonymous donor for the purpose of recognizing "outstanding achievement in basic or applied research in any branch of the biological sciences, provided the research contributes, either directly or indirectly to the advancement of forestry." At the annual banquet, I shall have the honor of presenting the first awards to be made under the provisions of this grant.

Early in the current year we had a problem arise as a result of nonprofessional men giving forestry advice to small woodland owners. This matter was taken up directly with Don Williams, chief of the Soil Conservation Service and, to the best of my knowledge, has been settled on a basis of better understanding. This was accomplished without acrimony or hard feelings. I wish to thank Don Williams for his cooperation in this matter.

Financially the Society is solvent, and we expect to close the current fiscal year in the black. Our balance is small but I am happy to report that we are operating within our income. We face some real financial problems in meeting prevailing salary and wage rates and spiraling operating costs. Because of limited finances we are unable to accomplish many things for the good of the Society and profession. It will soon be necessary to face this problem squarely if we are to grow and serve the profession commensurate with the growth of forestry throughout the nation.

It is anticipated that the World Forestry Congress will be held in the Pacific Northwest in 1960. Our Society will be expected to play an important role in helping to arrange for this Congress. Here will be an opportunity and a responsibility for the Society to work with others in showing the world what forestry in the United States is doing. Les Harper, chairman of the Committee on International Relations, will report on this subject in greater detail.

Throughout all of the Sections there there is a growing number of Chapters. Many of these are formally organized while others are informally arranged in such a way that nonprofessionals participate in discussing local problems and their solutions. I know of no better program for giving young foresters the opportunity of self expression in matters of both local and national importance. I urge every Section to continue its aggressive development of Chapters.

As foresters and forestry face forward we must keep our eyes on the horizon with its unlimited opportunities to develop new methods and techniques in the woods, in the laboratories, and in the manufacturing plants. Forestry is a dynamic profession that deals with a product of the soil which may be processed into commercial commodities or husbanded in its natural state to serve the needs of man. It has a multitude of facets and many areas of specialization.

The growth of population throughout the nation is being felt in many ways throughout the forest areas. The impact of fuller use of the forest lands and the demand for more forest products have created a new concept in forest administration and management. There are ever increasing conflicts of interest and philosophies of use as more people seek the forest for other than the production of wood. More and more the forester must adjudicate these conflicts and integrate these uses with each other.

Our need is for more than just good technicians. We need foresters grounded in sociology, psychology, and the humanities, for at every level the forester works with people as much as with trees. We know that our forests can be better managed and improved or poorly managed and impaired. We also know that good management can only be accomplished through the

REGISTRATION BY EMPLOYMENT

ANNUAL MEETING—1956

Private Industry	488
State	135
Federal	220
Educational	144
Miscellaneous	89
Total	1076

willingness and understanding of people—whether they be forest owners, forest operators, or users of the forest for other purposes.

So, as we face the uncertain and undeveloped regions in the field of forestry and utilization we must efficiently blend the theoretical with the practical. We must strive for the fusion of the using industries with the science of land use and timber production.

Report of Executive Secretary

Henry Clepper

The membership of the Society by grades on September 30, 1956, as compared with membership a year earlier, was as follows:

Grades	1955	1956
Student Member	542	641
Junior Member	4,745	4,847
Member	4,173	4,501
Fellow	68	76
Affiliate Member	631	710
Associate Member	242	247
Corresponding Member	68	66
Honorary Member	19	20
Total	10,488	11,108

Finances

Our income for the fiscal year 1956 is estimated at approximately $140,000 from all sources. Our most important single source of income is from members' dues. It will amount to about $95,000 in 1956.

A complete statement of income and expense for both 1955 and 1956 will be published in the JOURNAL following the report of the auditor at the end of the fiscal year, November 30, 1956.

Employment of Foresters

Frequently, the Society is asked to give information on the number of foresters practicing their profession in the United States.

At best, such estimates can do no more than indicate employment by broad categories. The estimates are based on Society membership statistics, but, as not all foresters hold membership in the Society, the figures take into consideration a large group whose fields of employment are not as definitely known as are those of our members.

Table 1 shows the estimated employment of foresters in the United States as of 1956.

TABLE 1.—ESTIMATED EMPLOYMENT OF FORESTERS IN THE UNITED STATES IN 1956

1. Public		
a. Federal, all agencies	5,000	
b. State, all agencies	1,800	
c. County and municipal	250	
		7,050
2. Education, including agricultural extention and institutional research		750
3. Private, including industrial		7,400
4. Unclassified, including allied fields		1,800
Total		17,000

1a. Includes foresters in overseas assignments, defense agencies, and miscellaneous federal resource activities.
1b. Includes state highway, game, taxation, and park agencies as well as forestry departments.
1c. Includes recreation and shade-tree work.
2. Includes teaching in high schools, junior colleges, and education in general conservation as well as professional forestry schools.
3. Includes about 1,250 self-employed, consulting foresters, and managers of non-industrial-owned woodlands.
4. Includes foresters working in wildlife and range management, arboriculture, engineering, erosion control, manufacture and sale of forest products, and in research in those fields not otherwise classified above.

Report of the Editor

The Society of American Foresters is in the publishing business. It is not so engaged for profit, as are many publishers, but for the purpose of furthering the stated objectives of the Society with respect to American forestry and the profession. Published material is by no means our only activity toward those ends, as will be apparent from the subject of other reports at this session, and as you who engaged in Society affairs know. Publications are merely a tool that we use.

Our chain of responsibility in these matters runs something like this: The collective membership of the Society is the publisher, who delegates overall responsibility to the Council. Material to be published originates from the members almost entirely. We have editorial duties performed by both paid employees and voluntary workers. These duties involve dealing with contributors of material on the one hand and on the other with the specialized craftsmen whose contracted services turn a finished manuscript into a publication.

All this coordinated activity is for the benefit of the reader, who again turns out to be primarily the membership of the Society.

It is essential in considering our publications with any constructive purpose in mind to recognize that we contract for certain functions that are too specialized for us to carry on and we employ workers for certain others that are too demanding for volunteer efforts. Except for that, the Society is author, publisher, and reader, and as authors our members are unpaid except for such personal satisfaction as may come.

The result is a much more involved chain of responsibilities, and intermeshing of efforts, than in a commercial operation where the publisher buys and sells a commodity and hires all services. For the purposes of the Society, however, this arrangement has an over-riding strength. It keeps the reins of control and the responsibilities for creative effort right at home. It means that Society publications are just what the Society is willing, or wants, to make them. Policies can be changed simply through the direction of the Council, minor matters by workable suggestions to the editors, subject matter content or handling by the creativeness of the contributors. If employed services seem inadequate they can be readily strengthened.

Viewing these features of responsiveness we see that Society publications can only be regarded as a direct reflection of the needs, desires, and the active participation of the profession. It is in this light that I hope you will consider a brief summary of tasks completed during the past year.

First, a few miscellaneous undertakings.

A valuable contribution to the literature in bulletin form has been compiled by the Committee on Forest Practices, Kenneth P. Davis, chairman, of the Division of Silviculture and put through the publication mill in our office. The title is "Forest Practices

Development in the United States 1940 to 1955." Price $1.

A vocational bulletin entitled "Forestry as a Profession" has been prepared for the information of prospective forestry students and their counselors. The approach used sought to stress the professional nature of forestry as a career and to define forestry work *basically* in the light of the five professional fields of knowledge set out by the Society as necessary in professional education. The booklet is brief, simply presented, and has a small first printing in order that statistical information may be easily revised and suggestions for improvement used to advantage.

A proceedings of the 1955 meeting was published and 1,048 copies distributed to registrants at the meeting. We printed a total of 1,500 at a cost of $3.24 per copy. Our business manager, Miss Warren, tells me that enough of the extra copies have been sold so that we are in the black financially on the venture.

Work on revision of the book *Forestry Terminology* has been temporarily delayed pending decision as how to best handle new terms in forest genetics that are to be added. We have reason to believe this will now be concluded promptly and the new edition available in a few more months.

President Nelson has indicated that sales of the *Forestry Handbook*, authored by the Society and published in 1955 by the Ronald Press Company, have been most gratifying. The publisher has now asked us to give consideration to whatever arrangement we intend to make for its periodic revision. They intend to make it a permanent item in their handbook series. The editorial committee for the book will, I know, be appreciative of suggestions from users as to improvements that may be brought about in subsequent revision of individual sections.

Our continuing and most important effort in the publications field is, of course, the JOURNAL OF FORESTRY. Obviously, it is worthy of the whole attention of this or any other editorial report, but you as members receive a copy monthly—I do not wish to take undue time on this program—so I will comment primarily upon some matters of background information.

We have been successful—mainly through publication of proceedings of the 1954 and 1955 annual meetings—in reducing our backlog of articles to the point that we have a publication wait of a few months, rather than a year or more. This has encouraged recent submissions. A summary of articles submitted to the JOURNAL between the period October 1 and September 30 following for the last four years is as follows: 119, 116, 70, and back up to 122 during the last year. Volume of receipts approximates rate of publication, considering the portion that falls by the wayside.

We have been able to solicit special contributions to some extent during the year and this together with more timely publication of unsolicited articles—we hope readers will feel—has brought about improvement in subject matter content and coverage.

The number of pages per issue has been reduced wherever possible during the current calendar year from the normal 80 to 64. The Council directed in February that the cost of the membership directory, issued in the summer, be borne in part if necessary by the JOURNAL budget. The directory cost more than anticipated—about $6,000. Savings in the JOURNAL budget to date approximate $1,600. Our sound financial position should permit resumption of normal issues shortly.

Advertising representative Lloyd Thorpe continues to increase the prestige of the JOURNAL as an advertising media, while Miss Warren sees to it that we remain within our operating budget. We have an interested, energetic, and capable board of associate editors, every one of whom is willing to give freely of his time to authors who feel they would like help. I am also—to the extent that I can contribute. Foresters who have assumed that it takes an "act of congress" to have an article published in the JOURNAL should give the editorial board an opportunity. Anyone who has something worthy to offer will find encouragement.

We have some modest plans for the near future in symposiums and series of articles on matters of current progress and interest. We maintain a running search for at least one or two articles per month that are meant to appeal to all foresters despite specialized interests.

We have a working sized backlog of articles on hand, and an encouraging pick-up in the number and variety of submissions. We can give prompt consideration and publication. I feel that we are in a healthy, maneuverable position.

The Council, the editorial board of the JOURNAL, and the staff welcome your ideas on ways in which you think the JOURNAL might be improved in its service to the forestry profession. We solicit submissions of material you feel might be suited to publication. We would like your opinions on subjects that need more or better coverage—especially if the suggestions are specific and include the names of possible authors.

All of us concerned with the JOURNAL would certainly like to see every possible step taken that will help to make it a more interesting and more valuable publication for every individual member of the profession. I firmly believe that if the membership of the Society gives more serious thought to the part it plays in the creation of Society publications we will move a long way toward that goal.

ARTHUR B. MEYER

Report on Forest Science

During the second year of publication of *Forest Science*, the Board of Editors has followed a conservative policy. The first year, although fully successful, left many questions unanswered. It was not known how many individuals would renew subscriptions to a scientific journal whose receipt was not tied to membership in a scientific society. It was not known how many articles would be submitted to the editors for publication in a totally new type of forestry journal. It was not known whether such a journal as *Forest Science* could meet its printing expenses solely from voluntary subscriptions and sale of reprints. For these reasons, the Board of Editors decided to consolidate rather than to expand, and to publish issues of approximately the same size as appeared in the first year.

With the fourth issue of Volume 2 now in press, these questions have largely been answered. Despite a considerable number of non-renewals, amounting to perhaps 15 percent of the total, enough new subscriptions have been received in 1956 to bring the total to 1145 as compared to 1224 in the first year. The four issues of Volume 2 will contain 42 articles and 12 book reviews in a total of 344 pages; as compared with 43 articles, 15 book reviews, and 356 pages for Volume 1. The flow of articles to the editor is constantly increasing, however, and 15-20 unpublished articles are now on hand for publication in early 1957.

Financially the picture is bright.

Since the fiscal year of the Society does not correspond to the publication year of the journal, any estimation of the financial position of *Forest Science* at the close of Volume 2 must be approximate. It is apparent, however, that income for Volume 2 will exceed expenses by $800 to $1,000 and that the journal will begin its third year of publication with a bank balance in excess of $3,500.

It must be borne in mind that, except for supplies and postage, all the expenses of the business office have been absorbed by the Society of American Foresters, and all the expenses of the editorial office by the University of Michigan. Even considering this generous support, however, the financial prosperity of *Forest Science* is unique among beginning journals in the biological sciences.

One innovation was introduced in Volume 2, and this was the publication of two longer scientific articles. From the beginning, such publication has been an aim of the editors, since relatively few channels are open for the longer scientific articles in forestry. It is hoped to continue with three or four longer articles a year, if the pressure of shorter articles is not too excessive.

Promptness in publication has been a primary aim of the editorial board. With very few exceptions all articles are appearing in the first or second issue following final acceptance. To the extent that finances permit, it is hoped to publish enough pages each quarter to be able to maintain this practice.

Considerable attention has been given to techniques of cooperating with the JOURNAL OF FORESTRY to avoid duplication and competition. These techniques are gradually being evolved, and a number of articles have been referred by the editor of each journal to the other during the past year.

The immediate future of *Forest Science*, then, is bright, with prospects of a slowly increasing number of subscribers, a more rapidly increasing supply of suitable articles, and a satisfactory bank balance. The Board of Editors plans to follow the precedents set in the first two years of publication, looking forward to a gradual expansion of the number of pages published in order to publish noteworthy scientific results promptly and at the same time be able to meet current expenses out of current income.

STEPHEN H. SPURR
Editor

Report of the Committee on the Registration and Licensing of Foresters

At a meeting of the Council, held February 19-21, 1956 President Nelson was authorized to appoint a special committee to set forth the principles underlying the state registration and licensing of foresters. The committee consists of Alvin B. Hafer, K. M. MacDonald, Archie E. Patterson, T. D. Stevens, and Julius Kahn, chairman.

This committee was not asked to draft a model bill, as different types of legislation are needed for different states. A supplementary report by Professors Patterson and Stevens follows. It identifies and defines the several provisions that might be considered in proposed legislation.

The origin of the professions from earliest recorded history is a fascinating study worthy of more extended attention than this committee was able to give. Professional personnel in the fields of engineering and architecture in ancient days probably had skill and experience comparable to modern engineers and architects, as is evidenced by the monumental edifices, fortifications, pyramids, canals, and other structures which even today hold our admiration. Yet we are left in doubt on the relation of those professions to the then public, how they evolved, and what constituted the training programs, and methods of recruitment of men.

Likewise, we know from ancient authorities of the existence of specialized personnel in the healing arts. These usually were specially assigned priests attached to temple worships of ancient civilizations. These temples, while serving many gods, invariably included the prevailing ruler as the active and articulate god. Some of these priests performed the office of physician. The ancient Hebrews probably carried this method with them from ancient Egypt with the Exodus, and by divine law devolved the function of physician upon their priests. The work of the priest-physician apparently was associated with diety; and continued to have that characteristic at the beginning of our common era.

Historical Notes

The legal profession, under English law, is associated with sovereignty. It was the English Crown that appointed the judges, and thus imposed its authority wherever England ruled. And it was these judges who controlled their courts, even to the extent of determining who were privileged to appear before them on behalf of litigants. Thus developed the profession known as attorney-at-law, which even today in the United States has all the aspects of an appendage to the courts for all lawyers are "officers of the court." Except for preprofessional and technical training, the standards of which are set by statute, the licensing function is performed by the courts.

The groundwork for modern professional licensure was laid with the rise of the "universities" during the Middle Ages. Both church and state exercised authority in the field of higher education afforded by these institutions. The older "universities" were self-governing branches of the ecclesiastical organization. Yet in the early Middle Ages we find an instance of Emperor Frederick II, a secular ruler, granting a charter to Naples, and of still another ruler, Roger II of Sicily, issuing a secular licensing of a physician.

As the institutions of higher learning of the Middle Ages grew in strength, their control was transferred from bishops and abbots to corporations of scholars known as the "universities." These regarded themselves as educational guilds, and operated in much the same manner as the craft guilds of that age. Nevertheless the historic connection to the church was preserved. Just as the apprentice to a craft upon being admitted as master was authorized to ply his craft in that particular locality, so the graduate of the "university" was licensed by the international Church to teach his subjects elsewhere. It was the degree which proved his qualifications to teach. This continues to be so today in England, where a university degree in medicine is equivalent to a license.

Interestingly enough, the New York State Department of Civil Service, in recruiting personnel for public forestry services, a nonlicensed profession, makes every effort to maintain standards equivalent to those recognized by that profession itself, the entrance level being graduation from a recognized forestry college. This expresses the ever expanding needs of the general public for reliable and accountable services in spheres where learning at the higher intellectual level and character are indispensable.

Yet that same department in recruiting personnel for public positions that require professional licenses insists that the candidate be licensed before he may be appointed. Others, as in the case of Georgia, are not so insistent for the assigned reasons that they lack personnel and further desire to give an opportunity to the unschooled man to rise in rank based on experience.

Modern licensure of professions is relatively of recent origin. It refers to governmental licensure of special disciplined men, usually organized into a specialized association or society. It denotes a particular form of special privilege whereby a licensee is permitted to engage in certain activities forbidden to those not similarly privileged, in exchange for services. As will be developed later, much more is implied in this relationship than a superficial reading of the foregoing sentence may suggest.

According to Donald G. Anderson, M. D., in the book *Education for the Professions* (1955), "The licensure of physicians in America had its origin in several of the colonies before the American Revolution. After the Revolution some states empowered medical societies and medical schools to license physicians. About 1835 legislation began to appear which placed the function of licensure under state boards, usually appointed by the governors of the states, but by the time of the Civil War most of the licensing laws had been repealed. By the 1870's, however, the states had begun to create boards of medical examiners, and by 1895 practically all had established some kind of administrative organization to examine and license physicians."

Your committee is indebted to the scholarly works of Dr. Alfred Z. Reed, staff member of The Carnegie Foundation for the Advancement of Teaching, for his illuminating reports entitled "Professional Recognition, Accrediting and Licensure" (1937), "Origins of Licensing in the Learned Professions" (1938), and "Accrediting Agencies" (1939), found in the mentioned annual reports of the Foundation. We have drawn on this source material for such ideas as we believe would bring to our professional society a sense of being part of a great historic development still in progress.

We do not like to leave this interesting subject of the historic background of modern professional licensing without mentioning the writings of leading men in our profession on this subject.

Generally modern professions derive their character by reasons of specialization and functional ability to serve the public more adequately. In that regard they find their counterpart in the craft and guild system of the Middle Ages. And, like those guilds, modern professions assume the prerogative of preempting the field to the extent of assuming responsibility for its personnel and the performance of the service measured by the highest reasonable requirements and needs of the general public.

Prior Committee Studies

Studies on professional licensure of foresters have been before several Sections of our Society during the past two decades. New York worked on it during 1938 and 1939 under the chairmanship of R. R. Fenska, and in 1940 under that of H. C. Belyea. In 1949-1950 the Allegheny Section considered the subject and had a committee of which George R. Moorhead was chairman. In 1947 R. V. Miles, Jr., chairman of the Legislative Committee of The Alabama Forestry Council advised of proposed legislation for licensing and registration of professional foresters and timber cruisers. Sections on the West Coast, and particularly Oregon, under C. E. Tulloch, have considered the subject. North Carolina gave it extended consideration recently. Georgia and Michigan have actually passed statutes concerned with the use of designated titles by foresters. We will discuss these professional title registration statutes later. Apparently licensure for foresters has not been left unattended by foresters.

The Meaning of a Profession

Since we are discussing professional licensing, it may be well to get a clear idea of what is meant by the term "a profession" in the field of higher learning. The credentials usually suggested as necessary for a vocation to qualify as a profession are:

1. It involves primarily intellectual activities.
2. It requires mastery of a specialized body of subject matter.
3. It requires mastery of specialized skills in handling that subject.
4. It requires continuous in-service learning and growth.
5. It sets up and enforces its own standards.
6. It affords a life career.
7. It exalts service above personal gain.
8. It has closely knit and well-integrated local, state, and national organizations.

If to the above there be added the imprimatur of legislative approval, we have professional licensing.

To quote Prof. M. L. Cogan, "a profession is a vocation whose practice is founded upon an understanding of the theoretical structure of some department of learning or science, and upon the abilities accompanying such understanding. This understanding and those abilities are applied to the vital practical affairs of men."

Applying these general standards to foresters, several acceptable definitions of professional forestry have evolved. Some revolve about the development of the land for successive tree crops; others, broader in conception, to take in all forest services derived from land; still others imply that professional forestry embraces not only services from woodland, but also the proper utilization of products and services.

Granted that each profession desires to stake out as broad a claim as possible for professional licensing purposes, it is essential that the meaning of "professional forester" be reasonably clear, workable for statutory purposes, and yet not have the effect of limiting the practice of an important and growing profession.

Constitutional Basis for Licensing and Registration of Foresters

Dr. Luther H. Gulick in *American Forest Policy* brings out clearly the nature of the public interest in forestry, the expression of that interest in the development of the forest resource in public and private ownership, and the public interest in the creation of specialized personnel at the level of higher learning in order to do the work involved, adequately and continuously. He states, "Because of this specialized training with its large technical and operational content, plus the solidarity and sense of responsibility of the foresters, and the public recognition and employment they have won over the years under great leaders, forestry has become a recognized profession—looked to increasingly by the public as the authority in this field. While this gives foresters a measure of influence and prestige, it also brings them under a responsible self-discipline, and makes them like all other professionals, ultimately servants of the public and subject in the last analysis to a vague but none the less real public sanction."

It is then the extension of the public interest in professional forestry per-

sonnel that is on the threshold of being expressed in terms of what the relationship between that profession (meaning government foresters and private and industry foresters) and the public should embrace. We are dealing with a calling affected with a public interest. It is in the efforts of trained foresters to meet the challenge of the public interest that we find the root of the splintering-off process in the professional forestry body.

The public demands from the forestry profession responsible and accountable services in the development and use of our forest resource, regardless of ownership.

When we speak of something "affected with a public interest," in a constitutional sense we mean that which concerns the public or its general welfare of sufficient weight or importance to justify consideration by the legislatures of the states, or by the Congress in a proper case, and to justify the enactment of laws expressing that public interest. It is the legislatures and the Congress that express the peoples' will, the people being the general public at large. The protection of the public interest in any field, expressed by legislatures, is by virtue of the "police power of the State."

However, we note that the police power of the state or of the Congress is an attribute of sovereignty. It is not susceptible of precise definition, and we must look to constitutional history for a better understanding of this power. Like the power of taxation, it can never be surrendered although the exercise of the police power can be delegated and often is. The legislature may set up standards of proper skill and learning and other qualifications for those who follow pursuits of skill and learning involving public safety and welfare. That interest may be expressed in terms of preprofessional and professional training, examination, character qualifications, and continued good performance and behavior. It is of interest to examine the constitutions of the States of New York, California, Michigan, Georgia, and North Carolina and to observe that no mention is specifically made of "police power." Nevertheless history has embedded it into the language committing to the legislatures the whole law-making power of the state, or to the Congress in its spheres, except as clearly withheld, subject only to the proviso that the legislation be in accord with the general welfare.

Statutes licensing the several professions, without exception, are expressions of public interest in the fields considered. Usually such statutes cover the entire field of professional activity by privileging those who qualify under statute, and excluding those that do not so qualify. And in those cases we note that the statute covers the entire field of activity and also the titles by which those licensed are to be known, both the field and the title being withheld from those not licensed.

However, we also note that the police power of a state in the field of professional licensing has been exercised in such a manner as to forbid the use of a designated professional title to all except qualified personnel. These are known as "professional title licensing or registration statutes," the point being that the field is left open to all persons, except that the title is restricted for use in a field of professional activity, to those who qualify under applicable statute.

Whatever may be the fundamental reasoning for this situation it is clear that the legislature may express its interest in the general welfare in that manner. Thus we find that in New York the professions of psychologists, certified public accountants, certified short hand reporter; in Michigan, the registration of professional foresters; in Georgia the registration of physical therapists, registered foresters, and certified accountants; in California landscape architect, and accountants are professional title registration statutes.

An examination of professional licensing statutes in other states will probably disclose that so-called "title registration statutes" is a method employed by legislatures in the field of professional licensing. Perhaps, then, Henry Clepper's thought that licensing and registration of professions are complementary actions, is sound.

We conclude that the public interest in professional forestry licensing legislation may properly be exercised in such a manner as to leave the full field of professional forestry work to all persons, but restrict the use of a particular title, such as "registered forester" or "professional forester," to designated persons. Such appears to be the character of professional forestry registration statutes in the states of Georgia and Michigan, the only two states that have enacted laws pertaining to licensing of professional foresters.

Education Power at the State and Federal Levels

The Union known as the United States of America was organized by the Constitution of 1787, wherein the states or free colonies ceded to a central government complete power and control in matters concerned with war, federal taxation, currency, treaties, international affairs, interstate commerce, navigation, the territories, postage, and other matters set forth in Section 8. We therefore think of the federal government as one existing by ceded or enumerated powers, expressed or by necessary implication. However, the power of education was not one of those which the states ceded to the central government, but on the contrary was one which they retain and exercise fully. This conduct by the legislatures in the field of education, both public and private, is but another example of the exercise by the states of their sovereign police powers.

The states have expressed that police power in the field of education extending through professional licensing and registration of the professions and the control of actions of licensees thereafter. It is natural enough to see that if a state, in the public interest, considered the character or type of educational training reasonable, in harmony with public needs, that it would be but a step forward to request those disciples to prove their qualifications in order to preempt a field of activity. Such are the conditions under which professional licensure and registration operate.

The federal government has not undertaken the function of the operation of the school system in the states, nor as that school system branches into professional licensing at the level of higher education. Nevertheless, the interest of the federal government in education can find constitutional support.

The central government maintains an Office of Education and its interest has been focused on the field of education by studies, federal aid to states for educational facilities and teachers, federal-state appropriation-matching programs which inherently involve professional personnel, and the federal land-grant college program.

While the control of education has been retained by or left to the states and appears to be the constitutional and statutory responsibility of the state, there is respectable authority for the position that the federal government may have power to promote and

to control education, if it so desires.

With the public demand for all types of higher education, it becomes a question of the ability and strength of the states to meet this public interest, and that may well determine whether the federal government will enter the field of education directly, at all levels, including professional licensing.

The state statutes licensing professions invariably contain the method or provide the agency by which the law is operated and enforced. Sometimes the legislature delegates the operation and enforcement of these laws to a separate department of state government, as is the case in New York and California, and sometimes to special boards of licensing or registration, as is the case in Georgia, North Carolina, and Michigan. It should, however, be clearly understood that such agencies are legislative in all instances.

Analysis of Professional Licensing and Registration Laws

We have examined the statutes licensing professions in the States of New York, California, North Carolina, Georgia, and Michigan, and analyzed them to better understand their purpose, function, operation, and enforcement.

Bearing in mind that modern professions are historic outgrowths of the Middle Age "university" whose members were imbued with the guild idea of exclusivism in functioning in a definite field, it becomes clearer that the initiative for professional licensing derives its momentum from the organized profession. It is this conscious group action that accounts for defining the field of action, the requisite training, the standards of professional performance and conduct, and relegates to itself as well the standards that the public should reasonably require of that group. This is the essential relationship that is embodied in professional licensing statutes. For the price of exclusiveness in a particular field, the profession becomes a public servant, wherein the public welfare is in fact the prime consideration, and monetary gain is always at best in second place, although this does not mean that a professional should not be fairly and adequately compensated.

Under modern licensing provisions there are at least four parties to the arrangement conferred in statute. One of these is the professional as an individual expressed through group action of the professional society. Others, although often considered part of the professional group, are the faculties and institutions training men for the field concerned. Another is the agency of the legislature that performs the licensing function. Another is the legislature itself, always sensitive to public opinion.

If we conceive of this four-party arrangement as a contract to obtain the best services that can resonably be expected from specialized personnel, including recruitment of personnel, its preparation and training, its equipment, its character in terms of continuous, reliable, competent and able professional services, at all levels where reasonable public demands are evident, we approach an understanding of what is implied in professional licensing. Each party to this arrangement is constantly striving to comply with the public interest in terms of service to the general welfare.

There rarely is harmony among all four of these parties, except as the harmony of effort creates at times identical action among all of them. Only too often, however, the legislature in response to public reaction makes demands upon the men in a particular field, and looks to its licensing agency for appropriate action, which in turn looks to the organized profession and its training centers.

There is no conflict of interest where the primary idea is essentially that of public service. At other times the professional schools meet the public interest in term of accrediting standards. And there are times when the profession reexamines itself in terms of responsibility to the public.

We are reminded of the expression "uneasy lies the crowned head," and we suggest that the medium of professional licensing places the sceptre into the hand of a profession in its field. The royal emblem of Edward VIII states simply *"Ich Diene,"* translated "I serve." No truer statement can be attributed to a profession that assumes governmental licensure.

Professional Registration and the Meaning of "Grandfather Clause"

Ordinarily, the term "registration of professions" means licensing. How does it happen that the calling known as professional forester can, through its organized and unorganized components, preempt its field and/or the title in the public interest? The answer is literally: it cannot do so—without safeguarding the rights of everyone who successfully establishes a claim to having been a professional forester at a designated time, be he trained, semi-trained, or an outright charlatan.

The 14th amendment of the Constitution provides in part that no state shall deprive any person of property, without due process of law. Professional licensing presently is the exclusive prerogative of the states.

The right to work in forestry and as a forester is the property right enjoyed by anyone who desires to engage in that work and calling, save only as to title, in the States of Georgia and Michigan. Rights of such persons cannot be invaded under the guise of police powers and regulations in the general welfare, except where it is clearly manifest.

Courts are reluctant to enforce licensing provisions to the exclusion of the rights of persons already in the field, who do not have statutory qualifications. For this class of people the statute usually provides that a license be issued, based on proof of performance in the field, whether of a required level or not, provided however that such persons register. The statutory compulsion in such cases is emphasized with reference to registration, for which reasonable rules and regulations are developed in the statute or under the rule-making power conferred on the licensing board.

Sometimes a licensing statute makes no mention of this situation. It need not, since the persons affected are protected by the 14th amendment; and those rights will be protected, but the act will be enforced to the extent of compelling registration, on pain of prohibition to work or use a title.

The lifetime of the last person alive since the time that a particular professional licensing proposal became law, who can prove that at the time of enactment he was engaged in the work of the profession, is often measured by the span of years a grandfather is supposed to have. For the foregoing reason, this situation, in reference to licensing statutes, is referred to as the "grandfather clause."

Registration has still another meaning in the field of governmental licensing. And that refers to the requirement for licensed persons to register thereafter at stated intervals, provided in statute, usually with the licensing board, often, however, with the clerk of the county in which the licensee resides or has his principal office. Thus in New York engineers and land surveyors must register biennually, in Georgia and Michigan registered foresters must renew their licenses every

year, in North Carolina dentists must renew their licenses each year, in Georgia architects each year, and in California for engineers one year. Lawyers usually need not register periodically, although an effort to require same was made recently.

There is still another type of registration which in statutes is sometimes classified as "certification." This refers to professional in-training experience which many professions require as a condition for licensure.

These are not to be thought of as tax revenue provisions, though small fees are attendant upon examination, licensing, registration, and renewal. These usually vary from a maximum of $25 for examination and original licensing to as little as $1 for registration renewals.

The purpose is to make available to the general public, through the licensing boards, the names and addresses of active practitioners and to acquire ready jurisdiction over them for enforcement purposes in cases where infractions of statute are alleged.

Foresters Performing Surveying Services

Forest engineering and surveying are basic courses of instruction in all professional forestry schools. Sometimes the availability of such courses is specified in statute, and at other times in the published curriculums of the colleges. We will confine this discussion to land surveying.

A land surveyor is one who surveys areas for their correct determination and description, and for conveyancing, or for the establishment or re-establishment of land boundaries and the plotting of lands and subdivisions thereof.

Considered that foresters do all or most of this kind of work in connection with cruising, sampling, purchasing of timber limits, planning and perhaps for other purposes, it seems strange that they are in effect, if not in fact, in violation of land surveyors' statutes every time they perform those services. And since in all states timber is realty by definition, and usually treated as part of the land, not much comfort can be gained from giving the operations of foresters, doing surveying work in a forest, or for forestry purposes, a narrow meaning. Nor can much pleasure be derived from an exception in some of these statutes applicable to government foresters doing surveying work on public forest properties.

In none of the statutes of New York, Georgia, Michigan, California, and North Carolina is there an exception or exemption available to foresters doing forest land surveying on private forest lands.

The Georgia foresters' registration act does not spell out the legal right of foresters to perform those services, and that appears likewise to be the situation in Michigan.

The committee is of the opinion that existing land surveyors' licensing acts, in all states, be amended so as to provide for this exemption or exception to graduate professional foresters, performing this type of work in or connected with forestry operations. Probably a better solution would be another section to the land surveyors' acts concerned with qualifications for forest land suveyors in forestry work. It would be of interest to test results obtainable from direct negotiations with the organized engineering profession.

This situation may cause embarrassment to foresters and has to one forestry college in the past. Foresters doing this work may not be able to enforce payment of compensation for such services, and may find themselves under objection in testifying about their work, or find that their maps are not admissible in evidence, over objections.

Analysis of the Statutes of Four States Pertaining to Engineering and Land Surveying

For the purpose of this report the analysis, discussion, and comments about to be generated have been made from the statutes covering the engineering profession in the states of California, Georgia, Michigan, and New York. We have selected that profession because we think generally that it fits the circumstances of the forestry profession to a greater degree than others, because it is a modern profession which has become licensed in most states during the past 20-30 years, and because the statutes are full licensing laws covering both the field of professional engineering and specified title.

General welfare provision.—In each instance the statute contains language expressing the public interest for the exercise of the police powers of the state, in terms of safeguarding property and promoting the general welfare.

Definition.—It defines the field of activity of the professional engineer in broad general language. It speaks of engineering in the practice of professional engineering, or a holding out of being able to perform such services. There is a close relationship between the definition and the requisite training required for licensure.

The language of the two existing foresters licensing statutes follows the same general construction.

Grandfather clause.—It is here that a practitioner engaged in professional engineering prior to the passing of the law is protected by registration in lieu of examination or other more formal prerequisite.

License qualification.—The statutes usually provide that any person practicing or offering to practice hereafter (meaning after the effective date of the law) shall submit evidence of qualification. For those desiring licenses not already in the field after the passage of the act there is detailed in the law what shall constitute minimum training requirements to take examinations for license. A candidate must pass the examination, be of age, usually citizenship is required, be of good moral character, completed four years of high school in an approved school, graduation from an engineering college, also approved, and evidence of practical experience.

The word "approved" here is of interest. It refers to the standards of preprofessional education and technical training at the college level, which are usually determined by arrangement between the profession, the colleges, and the licensing boards, and embraces accrediting arrangements. It is here where the profession assumes its full prerogatives heretofore discussed. We suggest that the standards set by the statute be not less than the standard of the profession.

The laws of other professions spell out more clearly the conspicuous and aggressive part played by the organized profession in the functioning of the statute. Thus the Georgia Chapter of the Southeastern Section of the Society of American Foresters is mentioned in the Georgia Law, but the Michigan statute does not mention our professional society. Actually as we have seen, it is hardly possible for a professional licensing statute to function without the organized profession prescribing and ordaining who, what, how, when, and where for practically the entire range of activity. It is desirable to incorporate the name of the organized professional society. This is common practice in many licensing statutes in the states.

Indicia.—Some professions have

seals as in engineering, which must be used before plans are accepted. The title of the profession is also protected, and this usually extends to similar sounding titles or abbreviations.

Legislative machinery.—The statutes usually provide rather carefully how the board shall function, with reference to records, examinations, licensing, prerequisites, and other responsibilities. It is well to recall that these boards are legislative creatures, and as such can only operate with reasonably definite standards. As legislative agents they cannot exceeds the bounds of their assignment.

Renewal.—Here we have the renewal feature herein discussed. We think that biennial registration is better than annual registration, and that quintannual registration would perhaps be more preferable.

Effect of license.—A license has the effect of qualifying a professional presumptively for all purposes. He starts with his license on the basis that same would not have been issued to him except he had first proved his qualifications. This is a very important advantage, especially to a professional man.

Method of doing business.—The statutes indicate that the legislatures think of licensees as individual persons. Corporations therefore are not usually licensed, however licensees may conduct their operations in corporate form, provided that the principal officers, directors, and stockholders are licensed.

Exemptions and exceptions.—Most professions in seeking licensure must accommodate themselves to special situations existing at the time the law is proposed. Thus the engineers had to provide for nonresident engineers coming in to do work for short periods of time; changes of residence of engineers; government engineers on government work; minor road work by highway department employees; architects but not as engineers.

Disciplinary proceedings.—This refers to the power to revoke, suspend or annul the license or renewal, as well as reprimand, censure or discipline a professional, for stated causes.

In other professions an entire code of ethics is set forth in the statute. That does not appear to be the case with engineers and with the two extant forestry statutes.

As we see it the grievance proceedings for causes stipulated in statute supplement the code of ethics of the professions with this additional consequence: a licensed professional who loses same for cause cannot lawfully practice thereafter.

Reciprocity.—This provision in statutes confers on a state board the right to grant its license to persons of other states, provided that the other state has equivalent standards of professional requirements. This brings the profession, the colleges, and the licensing boards of the various states into coordinated efforts, so that qualified men and services can move freely between the states.

Penalties and violations.—Provisions for civil liability and penal visitation.

Miscellaneous Items

Your committee in the course of its studies necessarily came into contact with some matters which are not strictly within the orbit of its assignment, but which may be of interest to our Society. These have some bearing on our work.

The field of work performed by tree surgeons has been the subject matter of state regulation in New Jersey, Connecticut, and to some extent in Massachusetts, and proposed in New York. The function has usually been placed within a bureau of the State Conservation Department and in the case of New York with its Department of Agriculture and Markets. These requirements are not to be considered in the same class as callings at the higher intellectual level of learning; they are, though, in the same class as skilled trades. Massachusetts and New York have considered but not passed proposals for registration of arborist.

Forestry as a profession, even though it be unlicensed, was recognized by the Department of Taxation and Finance of the State of New York, in connection with an application made by an outstanding private professional forester of the State of New York, for exemption from the tax on business, upon the ground that 80 percent of his income was derived from professional forestry fees with capital not being a material income producing factor. In another case, a person not licensed as a lawyer in New York, but licensed to practice before the Federal Interstate Commerce Commission and state regulatory bodies, could not claim this exemption, upon the ground that his status did not require knowledge of an advanced type in a given field or learning gained by a prolonged course of specialized instruction and study which was essential to the term "professional" as used in the statutory exemption.

We have not touched on the trades, crafts, and even businesses involving skilled trades, which have been the subject matter of the public interest for the reason that though skill and long experience are requisite they do not involve long study at the intellectual level in higher education. Some of these trades, such as electrical and building contracting, are licensed at the state level in North Carolina, and in the case of real estate brokers and barbers at the state level in New York. Usually, however, in these crafts licensing is done at the level of local government.

Your committee desires to express its full appreciation for the contribution made by David H. Hanaburgh, a Yale forester, and a member of the New York Section, engaged in private consulting professional forestry work, for his monograph, establishing that professional forestry is a calling affected with a public interest; to Congressman Francis E. Dorn, Tenth Congressional District, Brooklyn, New York, for his timely compliance with requests made by your committee for data; to Miss Wilson of the Carnegie Corporation of New York, for making available to your committee the several foundation reports herein referred to; and to the several heads of the licensing boards and educational departments in the states herein mentioned, for furnishing to your committee publications, articles and other information of value.

The foregoing, together with the correspondence engaged in by your committee *inter-alia* and with third parties, assembled into a bound volume and described as the proceedings of your committee between designated dates, as well as copies of the publications, statutes, and other data mentioned and filed with our Washington office, constitutes the report of your committee.

ALVIN B. HAFER, North Carolina
K. M. MACDONALD, California
ARCHIE E. PATTERSON, Georgia
T. D. STEVENS, Michigan
JULIUS KAHN, *Chairman*, New York

Registered Forester Acts

There are a number of categories that should be considered in the preparation of legislation to register and license foresters. Some are essential, others serve to clarify and identify, while still others may be included at the discretion of the bill writers.

Two acts registering and licensing foresters are presently in effect. They are found in Georgia and Michigan. Registration and licensing is and will be considered in other states. In an attempt to be of assistance to those contemplating or preparing registration legislation the salient features of the Georgia and Michigan Acts are enumerated below with appropriate comments and suggestions.

1. *Purpose of the act.*—This category should set forth the interest and important provisions of the Act. These might be stated as follows: An Act to provide for the registration and regulation of foresters; to create a state board of registration for foresters and to prescribe its powers and duties; to authorize imposition and collection of fees, to authorize appropriations and disbursements therefrom and to provide penalties for the violation of provisions of this Act.

Additional stipulations may be needed to comply with the requirements of a particular state. In Georgia, for example, it is understood that the phrase "to repeal all conflicting laws" must be included as a purpose of an act.

2. *General provisions.*—The terms "forester" and "registered forester" should be defined in this section. The distinction between the two terms being that only those licensed by the state to do so may use the title "registered forester".

Statements as to the permissive or compulsory character of the Act should also be covered in this section. The two existing acts are permissive since experience indicates, at least initially, that state legislatures are more receptive to this approach.

This section should also stipulate that the Act will not prevent any individual, firm, partnership, or corporation from practicing forestry on their own lands; this principle is in conformity with most all regulatory and licensing acts.

It would also be appropriate to specify that the act is for "the benefit and protection of the public" and not for the purpose of legislating for the benefit of professional foresters.

3. *Definitions.*—Any act should clearly and precisely define a number of terms, including "forester", "registered forester", "practice of professional forestry", and "board", the group responsible for the administration of the Act. These definitions are very important because through them the "sheep" will be separated from the "goats" if they are to be separated.

4. *Board of registration for foresters, membership, appointment, term.*—This section should provide for the creation of a state board to administer the Act. The number of board members, qualifications, method of appointment, and term of office should be stipulated. The Georgia and Michigan Acts provide for five-man boards, the members being appointed by the governor, subject to Senate approval, for staggered terms of five years each.

Some states are considering the possibility of having an overall board to administer all registration and licensing activities. While popular with legislatures the idea is opposed by many professional groups.

5. *Qualifications of board members.*—When a separate professional board is created, qualifications for membership should include a consideration of citizenship, technical preparation, and number of years of professional experience. The Georgia and Michigan Acts require that members of the board qualify as professional foresters under the terms of the acts and must also have ten years or more of professional experience. The Georgia Act further stipulates that a board member must be a Member or Fellow of the Society of American Foresters.

6. *Compensation and expenses of the board.*—Board member per diem, if any, and provision for travel and other necessary expenses incurred in carrying out the provisions of the Act should be set forth in this section.

7. *Removal of board members and appointment for unexpired terms.*—State laws usually provide for the removal of board members by the governor for official misconduct or habitual or willful neglect of duty; if applicable this should be so stated in the Act.

The manner of filling unexpired terms should also be described. The Georgia and Michigan Acts provide

REGISTRATION BY STATES
ANNUAL MEETING—1956

Alabama	71	New Jersey	1
Arizona	2	New Mexico	3
Arkansas	124	New York	11
California	20	North Carolina	36
Colorado	12	North Dakota	1
Connecticut	8	Ohio	24
Florida	29	Oklahoma	21
Georgia	78	Oregon	16
Idaho	5	Pennsylvania	8
Illinois	28	South Carolina	14
Indiana	12	South Dakota	1
Iowa	5	Tennessee	117
Kansas	1	Texas	26
Kentucky	20	Utah	7
Louisiana	98	Vermont	1
Maine	4	Virginia	10
Maryland	7	Washington	12
Massachusetts	3	West Virginia	2
Michigan	30	Wisconsin	15
Minnesota	16	Dist. Columbia	25
Mississippi	111	Foreign	6
Missouri	27	Total	1076
Montana	5		
New Hampshire	3	(Plus 257 ladies)	

for unexpired terms to be filled in the same manner as full terms.

8. *Organization and meetings of the board.*—The time after the effective date of the Act during which the original board must be appointed and the time during which the board must hold its first meeting should be clearly indicated.

The number of board meetings per year, board officers, method of electing or appointing officers, and definition of a quorum should also be included in this section.

9. *Powers and responsibilities of the board.*—The board should have the power to make all by-laws and rules, not inconsistent with the constitution and laws of the State, which may be reasonably necessary for the proper performance of its duties, subpoena witnesses, and compel them to testify and produce such documents as may be deemed necessary and pertinent thereto.

The board should have the power to collect fees which should be deposited with the State and dispersed according to law.

The board should also be required to keep a record of its proceedings, register of all applications, publish an annual roster of registrants, and submit a report of its transactions periodically to the governor.

10. *Requirements for registration.*—Provision is usually made for applicants to quality for registration under more than one procedure. Experience is a requisite of all methods. The two existing Foresters Registration Acts provide for three procedures as follows:

(1) Graduation from a curriculum approved by the board plus a minimum of two years experience of a character acceptable to the board. In the Michigan Act a curriculum to be acceptable must contain at least one three-credit course in silviculture, forest protection, forest management, forest economics, and forest utilization.

(2) Applicants without a degree in forestry may qualify by successfully passing a written examination designed to show knowledge approximating that obtained through graduation from an acceptable 4-year curriculum and a record of four or more years of active practice in forestry work of a character satisfactory to the board and indicating that the applicant is competent to practice professional forestry. Under this clause the Georgia Act requires six years of practice instead of four.

(3) Qualification by experience alone. This provision is commonly referred to as the "grandfather clause," and it is doubtful if any act could be passed without it. The existing acts provide that any person who shall have been engaged in the practice of professional forestry as defined in the acts for at least ten years shall be eligible for registration without reference to education or examination. The Georgia Act requires that applications under this category be filed within six months from the effective date of the act; the Michigan Act stipulates fourteen months.

Existing acts provide that after five years from enactment no person shall qualify as a registered forester excepting that person who shall have graduated from a curriculum in forestry of four years or more in a school or college approved by the board and who has a specific record of an additional two years or more of experience in forestry work of a character satisfactory to the board and indicating that the applicant is competent to practice forestry. Persons not of good character and reputation are excluded. Provision should also be made to accept varying amounts of formal training without graduation as partial fulfillment of experience requirements.

In addition to the foregoing the subcommittee suggests that the following statement be included in any act: "Each applicant shall be examined for registration upon his individual qualifications and neither graduation from an approved school, experience, place of employment, nor condition of employment shall of themselves, individually or collectively, be reason for licensing."

11. *Application and registration fees.*—Applications should be made on forms prescribed and furnished by the board and should contain statements made under oath as to citizenship, residence, applicant's education, detailed summary of technical work, and the names of qualified persons having knowledge of applicant's forestry experience.

The Georgia and Michigan boards have adopted a code of ethics which is printed as part of the application.

The registration fee for a certificate should be fixed by the board within any limitation prescribed by the act. The usual procedure is for one-half said fee to accompany the application as an application fee, and the balance to be paid before issuance of the certificate. Should the applicant fail to remit the balance within 30 days after being notified of his qualification he should be required to again submit an original application and pay an original fee therefore. The board should retain fees for denied applications.

12. *Examinations.*—Written examinations, when required, should be held at such time and place as the board shall determine. Methods of procedure and re-examinations with or without fee should be prescribed by the board.

13. *Licenses.*—The board should issue a license (certificate of registration) to properly qualified persons. Said license should show full name of registrant, license member and be signed by the chairman and secretary of the board under the seal of the board. In addition to the certificate Georgia and Michigan boards issue pocket cards stating that the holder is a registered forester.

Plans, maps, specifications, and reports issued by a registrant should be endorsed with his name and license number during the life of his license. It should be a misdeameanor for anyone to use an expired or revoked license. Futhermore it should also be a misdemeanor for a registered forester to endorse any plan, specification, estimate, or map unless he actually prepared such material or was responsible therefore.

14. *License renewal.*—Provision should be made for renewal of the license upon its expiration. This may be done annually or at longer intervals depending on the Act. Renewal fees should be fixed by the board within limitations of the Act.

Editor's note.—Please observe that this issue of the JOURNAL reports in general concerning the 56th annual meeting of the Society and reports in detail concerning business matters pertaining to the Society as a whole and to individual subject Divisions. Talks and papers delivered at the general session and at the sessions of the subject Divisions will be published in a separate Proceedings of the meeting. Copies of the Proceedings will be mailed to registrants at the meeting as soon as it is off the press.

15. *Firms, partnerships, and corporations.*—Registration should be determined upon a basis of individual personal qualifications. No firm, company, partnership, corporation, or public agency should be licensed as a registered forester.

16. *Reciprocity.*—Permission to use the title registered forester should be granted to a non-resident when such non-resident is legally licensed in his own state where requirements for registration therein are essentially equivalent to the act and where the non-resident's state observes the same rules of reciprocity for persons licensed under the act.

17. *Revocations and reissuance of licenses.*—The board should have the power to revoke and reclaim the license of any registrant who is found guilty by the board of gross negligence, incompetency, or misconduct in the practice of professional forestry. The board should also have the power to revoke and reclaim licenses which have not been renewed. A new license to replace one revoked, lost, destroyed, or mutilated may be issued subject to the rules of the board and upon payment of an appropriate fee.

18. *Violations and penalties.*—Any person who shall practice or offer to practice the profession of forestry as a registered forester in the state, without being registered in accordance with the provisions of the act, or any person who shall use in connection with his name or otherwise assume, use, or advertise any title or description tending to convey the impression that he is a registered forester, without being registered in accordance with the provisions of the act, or any person who shall present or attempt to use as his own the license of another, or any person who shall give any false or forged evidence of any kind to the board in obtaining a license, or any person who shall attempt to use an expired or revoked license, or any person, partnership, or corporation who shall violate any of the provisions of the act should be guilty of a misdemeanor and upon conviction thereof should be fined according to the laws of the state.

A. E. PATTERSON
T. D. STEVENS
Subcommittee,
Registration and Licensing Committee

Report of the Special Committee on Public Relations

In June 1955 C. H. Coulter and J. Herbert Stone, Council members, sponsored a resolution requesting the Public Relations Division to survey the methods used to publicize the Society and its work among SAF members and the general public as well. The purpose of this survey was to determine just what is being done by the national office, the Sections, and at annual meetings to keep the profession of forestry and the objectives of the Society before its members and the public in general.

The survey has been made. The response from 17 Sections was unusually good and was prompt.

The following Sections returned the 2-page questionnaire:

Allegheny
Appalachian
Central Rocky Mountain
Central States
Columbia River
Gulf States
Intermountain
Kentucky-Tennessee
New York
Northern California
Northern Rocky Mountain
Ozark
Puget Sound
Southern California
Southeastern
Southwestern
Upper Mississippi Valley

This fine response is an indication of interest in the Society's public relations. No doubt the reporting Sections may be doing a lot more to publicize the forestry profession than is indicated on the questionnaires which they returned. However, this report is based on the information supplied.

Since the Council's request bears on both Society members and the general public, certain activities or lack of them stand out.

For informing members and perhaps some of the general public with a special interest in forestry, the JOURNAL is a good medium. Over the years there has been a continuing improvement in both its content and format. We can well be proud of it. However, it is a technical journal with the primary objective of helping members keep abreast of progress of the forestry profession. It, in itself, is not and perhaps never will be a major means for informing the general public and non-member foresters about the Society and the profession. In fact, it is doubtful that we can ever expect the national office to conduct a direct public relations or informational forestry program. However, it can be a big help to the Sections which have the real opportunity for effective public relations.

As an example of what the national office can do—and is doing—to assist the Sections, a new booklet, "Forestry as a Profession," has just been published. It stresses the professional nature of forestry as a career and seeks to supplement rather than replace other literature that is aimed at interesting young men in a forestry career. It is a valuable tool for all of us to use in our efforts to get more qualified young men to prepare for a career in forestry. The Sections can and should use it effectively.

A lot of good public relations can be promoted through other technical and scientific organizations and even lay groups. However, there is little evidence that the Society as a whole is taking advantage of the opportunities in this field. I purposely omitted the word "related" in speaking of other professional groups. There is no reason why we cannot interest a medical association in the Society and forestry just as we can a group of sportsmen. The approach may be different, but it doesn't take too much imagination to see the relationship between health and forests.

Now, for the public relations and informational work of the Sections.

Six of the reporting Sections have Public Relations Committees, while one has a Publicity Committee. Some Sections with such committees were able to transmit evidence of their activities—newsletters and forestry reports with possibilities of reaching others than foresters alone. However, the Public Relations Committees have opportunities far beyond the publications field.

The balance between strictly technical and non-technical meetings varies by Sections. While most meetings are more or less technical, banquets, field trips, foresters' days and similar activities offer an attraction to the press and other laymen guests. However, several Sections indicate that laymen are seldom invited to Section meetings. Here would seem to be an opportunity to expand on this particular public relations opportunity. Of course, we all know that there are limiting factors, such as space, nature of discussions, time of meeting, costs, etc.

Associate Section members (not members of the Society) are a public relations medium. The 17 Sections with a total membership of 8,712, reported 82 associate members or less than 1 per 100 SAF members. Interestingly enough, 8 Sections with a combined membership of 4,642, report no associate members. Two more with substantial membership, report one associate member each. Are we taking full advantage of our opportunities in this field?

Note in his report to the Society, President Nelson brought out that in 1906 the Society membership was almost equally divided between members and associates among whom were President Theodore Roosevelt and Secretary of Agriculture Wilson.

Although the reporting Sections make regular announcements to the press, most do not similarly inform the radio or TV stations. Only one Section distributes its newsletter to the press. However, one Section officer in answering that item on the questionnaire, wrote, "No, but it will be."

Only three Sections reported publications aimed at other than members. Two have publications for schools; one has a pamphlet for prospective foresters. Of course, the Sections are not in the publications business as a normal activity. However, that some are exploring this field indicates that it has possibilities as an informational medium.

More than half of the reporting Sections (or their Chapters) conduct field days or participate in them. While most such events are for Section members, some few are aimed at students and other groups.

Field days and demonstrations are news, and therefore if properly announced, usually get attention by the press and radio. However, publicity is usually better when press and radio people participate in these activities as invited guests.

Three Sections reported the use of exhibits as an informational medium, but two aimed them only at those in attendance at Society meetings. One Section has an exhibit for schools, showing photos of certain phases of forestry practices.

Color slides are rapidly gaining in popularity as visual informational aids. However, no Section reported the development of color slide sets to describe the Society's work to people outside the profession.

Several Sections reported considerable activity in high school career days, counseling with forestry students, and other work with schools and youth groups. These activities are among our most effective methods for interesting young men in the forestry profession. We need to seek out prospective foresters, familiarize them with the profession and the Society, and get them started in the forestry schools of their choice. If we can do a good job in this, we will automatically improve the Society's public relations, and at the same time we will do a lot for forestry.

Now, what can we conclude from this brief summary of the Public Relations survey? Are we tackling this important phase of forestry with the vigor it deserves? Or, are we leaving almost the whole job to public forestry agencies and the forest industries? What do you think? In making your decision, keep one or two points in mind. Remember, that everything done by the Sections is done by contributed time—every member has a full time job which must come first. And, also bear in mind that the Society has not as yet developed very much to assist the Sections in tackling this job more effectively than they are now doing. To help get a public relations program started, the Division, through a Committee appointed for the specific purpose, will present to the spring meeting of the Council a suggested Public Relations Program for the Society. This will be aimed primarily at the Sections and their Chapters.

C. W. MATTISON

Report of the Committee for the Advancement of Forestry Education

At the beginning of 1956, a new Committee was appointed with the below listed membership. Only two of the members carried over from the preceding Committee, Professors Kaufman and Wohletz.

The first action completed was one actually taken by Professor Krueger's Committee: the approval of continued accreditation of the Pennsylvania State University.

During 1955, the University of the South requested an informal review of its School of Forestry, looking toward possible accreditation. After examining the materials submitted, Mr. Krueger and his Committee expressed a negative reaction to this request. As the chairman of the new Committee concurred, a negative answer was conveyed to the University of the South.

Informal reconsideration was also requested by one other university for their Department of Forestry. Questionnaires from this school have been received and are in process of preliminary review by the Committee.

A formal request for accreditation was submitted by the Michigan Institute of Mining and Technology at Houghton, Mich. The Committee has reviewed questionnaires prepared for this institution, and an inspection of this Department of Forestry will be made in November, 1956 by a Visiting Committee composed of Professor Hartman, Mr. Clepper, and President Emens of the Ball State Teacher's College, representing the North Central Association.

For 1957, the Committee plans to continue the discharge of its current responsibilities in meeting requests for accreditation. In addition, it is planned to make a careful review of the Society's present standards for accreditation of schools of forestry. At its meeting on October 14, 1956 in Memphis, Tenn., considerable progress was made in this direction. The present standards were thoroughly reviewed and a number of revisions made, pointing toward the maintenance of high professional standards in forestry education. This task will be completed and revised standards submitted to the Council as early as possible. Also, the Committee plans to prepare a statement on forestry education in general.

GEORGE B. HARTMAN
C. M. KAUFMAN
W. F. MCCULLOCH
ERNEST WOHLETZ
H. G. WILM, *Chairman*

Report of the Committee on Civil Service

The federal government has taken steps to improve its system for the recruitment of foresters, both in the administrative and research fields.

First of all, the Civil Service Commission has given favorable consideration to urgent requests to increase the minimum rate of pay for positions (in all options) at grades GS-5 and 7 in the Forestry Series. The salary rates have been raised from $3670 to $4210, for Grade 5 and from $4525 to $4930 for Grade 7. These increases will be

effective on October 21, 1956, and the raises are applicable throughout the United States and Alaska.

Research forester positions, GS-7 and above, are now included in the U.S.D.A. Agricultural Scientist examination. Graduate foresters with a Master's degree qualify for Grade GS-7 ($4930), those having a Ph.D. degree in forestry for GS-9 ($5440). Where personnel are not available within the Services, recruitment at higher grades is permissible.

In addition to giving eight examinations this year to enable foresters to qualify for federal employment at the GS-5 and 7 grades, it has been recommended that the Forester Student Trainee examination will be given on a national basis. Students passing the examination would be placed on a nation-wide register and appointed to GS-3 positions at the end of their freshman year, GS-4 after their sophomore year, and GS-5 at the end of their junior year. They would be appointed to a GS-5 position after their graduation, and after six months of qualfying service would be eligible for promotion to GS-7.

A request by the Forest Service is now receiving consideration by the Civil Service Commission for authority to recruit foresters on an unassembled examination basis, i.e., eligibility would be established on the basis of a B. S. degree for grade GS-5, and GS-7 for those with a Master's degree or one year's field experience.

RICHARD F. PRESTON
Chairman

Report of the Council Committee on Membership

On behalf of your Council Membership Committee I present a brief report on the membership program. Since 1928 a major activity of the Society office has been promotion of membership. During that period membership has climbed steadily and since 1950 very substantially. As a result total membership of the Society of American Foresters today is 11,108. Of these about 40 percent are in the grade of Member, 43 percent in the grade of Junior Member, 6 percent in the grade of Student Member, and 11 percent in 5 other grades. During the first three quarters of 1956 there have been 589 new members and reinstatements and 87 terminations, a net growth of 497, or 5 percent per year.

Each year a particular phase of the membership program has been stressed. During 1955 emphasis was on remission of payment of back dues. This resulted in over 400 applications for reinstatement. This year emphasis is on the regular advancement of eligible Juniors to the grade of Member. A recent letter to 1,200 eligible Juniors brought a response of over 30 percent indicating the desire to our Junior Members to advance in grade and to gain the prestige which attaches to the grade of Member.

Graduates of forestry schools are consistently invited to apply for membership, and each school conducts an active member program among its students. These are just some of the ways in which the Society, working primarily through its Washington office, and the membership committees of the several sections, has been working to advance the membership program.

We of the Council Membership Committee feel that the membership program is one of the most vital activities which the Society carries out. Obviously, a large and growing membership is essential to the success of all other Society programs if we are to meet the responsibilities of an expanding profession. But equally important is the fact that it is through the enforcement of the membership standards which you have established that we, as a Society, can defend and advance our stature as a professional group. Thus the membership program is a two-fold one, seeking on the one hand to encourage every qualified man in the forestry profession to join the Society, but at the same time seeking to insure that the established standards of professional competence are rigorously observed.

In carrying out this program the Membership Committee calls your attention to the very heavy membership work load carried out so effectively by the Washington office and the Section membership committees. Those people do a tremendous amount of membership work but they cannot do the job alone. They need the help of every member here. Many of you are so situated that you can ferret out non-members among your working associates. I suggest you do so. If each man here were to promote the application of at least one new member, you can visualize the effect it would have on our Society.

There is a second important way in which you can help. Once an application for admission to the Society or for advancement in grade is submitted, the Section membership committee, the Washington office, and the Council Membership Committee have the very important responsibility of determining whether or not the applicant qualifies under our Constitution. The main evidence for judging such qualification is the sponsor statement. Members can help tremendously by treating with great seriousness the job of preparing such sponsor statements. It does little good to say in them that a man is a good fellow, attends meetings, or holds a responsible job. These are fine attributes but you have not seen fit to write them into your constitution as qualifications for membership. So we urge that in sponsoring you become thoroughly familiar with the requirements for the grade of membership in question and then write a sponsor statement specifically with reference to those requirements. Your statements provide the primary source of facts on which qualification for membership must be judged. Unless the facts are there the membership program is severely hampered. If you do pay careful attention to preparation of a significant sponsoring statement, you will not only save a lot of effort on the part of your Section officers but you will greatly reduce the number of instances where an application for membership is turned down.

We of the Council Membership Committee urge you to work closely with your Section and Washington officers to bring into the membership ranks every eligible forester in the United States. If you have questions or complaints about the membership system, your officers will be happy to hear from you. But above all, we want your active participation in a vital Society function—the encouragement of larger numbers of qualified Society members.

B. E. ALLEN
E. F. HEACOX
HENRY J. VAUX, *Chairman*

Report of the Committee on International Relations

Since the relinquishing of the chairmanship by Tom Gill at the end of last year, your Committee on International Relations has made a beginning in getting its work under way. It can scarcely be hoped that all of the activities so ably directed by Gill,

with his unique familiarity with foreign forestry and foresters, can be pursued the same as in the past. The new Committee will endeavor, however, to carry forward many of Dr. Gill's ideas for making its work effective under the list of Committee duties as approved by the Council, namely:

1. Pressing for adequate forestry recognition in U. S. government programs having to do with resource management abroad;

2. Urging adequate U. S. participation in important international forestry meetings;

3. Keeping the membership informed of important foreign meetings and reporting on their outcome;

4. Nominating distinguished foreign foresters for Honorary Membership and appraising qualifications of applicants for Corresponding Membership in the Society;

5. Recording additions to foreign forestry literature of interest to the membership;

6. Acting as a source of information and assistance to visiting foreign foresters and to our members going abroad;

7. Contributing foreign notes to the JOURNAL OF FORESTRY.

Several important forestry meetings, international in scope, have been held abroad during the first part of 1956. Of special interest to members of the Society were the following:

1. A meeting of the Working Party on Forests and Forest Products Statistics in Geneva in January. This Working Party is sponsored jointly by the Food and Agriculture Organization of the United Nations (FAO) and the European Committee on Economics (ECE). H. R. Josephson represented the United States in the discussions.

2. The Twelfth Congress of the International Union of Forest Research Organizations (IUFRO) which was held at Oxford, England, in July. The U. S. Forest Service's research organization joined the International Union at this meeting and the chairman of your Committee was elected to membership on the Permanent Committee. Several forestry schools as well as the Forest Service were represented at the meeting.

3. The FAO Technical Panel on Forestry Education was also held at Oxford in July. Hardy Shirley represented the United States.

4. The Eighth International Congress of Photogrammetry was held in Stockholm in July. Several participants from the U. S. Forest Service and Forestry Schools attended.

Meetings to be held during the remainder of the year include an FAO World Eucalyptus Conference, Rome, October 17-30, and an FAO Regional Latin-American Poplar Conference, Argentina, November 14-21. A member of the Society, Dr. Elbert Little of the Forest Service, has been appointed to the International Commission for Nomenclature for Cultivated Plants and will attend the meeting of the Commission at Utrecht, Netherlands, in November. Looking further ahead, there will be an FAO International Technical Conference on Insulation, Hardboard and Particle Board in Geneva, January 14-31, 1957.

In the field of forestry publications, the following have been received from FAO since the last report of your Committee: *Eucalypts for Planting*, September 1955; *Yearbook of Forest Products Statistics*, 1955; *Wood Burning*, December 1955; *Tree Planting Practices in Temperate Asia: Japan*, March 1956; *Tractors for Logging*, March 1956; and the *Report of the Eighth Session of the International Poplar Commission* (Spain, April-May 1955), August 1956. Copies of all FAO publications may be purchased from the Columbia University Press, International Documents Service, 2960 Broadway, New York 27, New York.

An International Cooperation Administration (ICA) report on *Forestry Progress and Timber Opportunities in the Republic of Liberia*, January 1956, has been prepared and will be available for distribution from that Agency. Other ICA reports are *Forestry in Panama*, December 1, 1955, and *Primary Wood-using Industries of British Honduras*, March 1956.

Recently, on the initiative of your Committee, a new roster has been established at Society headquarters containing the names of Society members who have expressed a desire to be considered as applicants for foreign forestry assignments. Instructions regarding filing applications were published in the July 1956 issue of the JOURNAL OF FORESTRY. The purpose of the roster is to permit the Society, when requested, to recommend qualified foresters for specific positions with agencies conducting technical assistance work in forestry overseas.

Most of the recruitment of foresters from the United States for service in foreign countries is done by ICA and FAO. Today, some 25 foresters, all of whom are members of the Society, are employed in technical assistance projects in the underdeveloped countries, and a much smaller number in the FAO Forestry Division Headquarters staff in Rome and the FAO working group of the Forest Economics Branch in Geneva.

Training of foreign nationals in forestry in continental United States and in Puerto Rico has continued, largely under the sponsorship of ICA and FAO. During the course of the year, approximately 100 will have received such training. For the second successive year, the U. S. Forest Service offered a three-months' short course in Tropical Forestry at its Tropical Forest Research Center in Puerto Rico, under the sponsorship of ICA and in cooperation with FAO. Your committee believes that this country's programs of training that are provided foreign nationals are among the most effective means of cooperating with the underdeveloped countries in an effort to help them build up and strengthen their forestry programs.

As reported in the JOURNAL OF FORESTRY for April 1956, the Society is one of seven U. S. organizations that is starting a program of international professional contacts with foreign nationals who have received training in the United States under the sponsorship of ICA. Some 400 forestry trainees from the less developed countries will have received training in the United States or Puerto Rico from the beginning of the technical assistance program until the end of the current year under such sponsorship. ICA is now circularizing its Operations Missions abroad to provide a list of all such trainees who desire to take advantage of this program, so that the Society may enroll them as Corresponding Members. For only $1.50 of his own money, the foreign participant will receive the JOURNAL OF FORESTRY regularly and may also call upon Society headquarters for various other services. It is anticipated that this program will eventually bring about much closer relations between foreign and American foresters, with important mutual benefits derived therefrom.

The chairman of your Committee is a member of the U. S. FAO Interagency Committee and is thus able to keep currently informed on the program of work of FAO in the international forestry field, particularly with respect to the various international conferences, regional forestry commission meetings, training centers, seminars, and meetings of technical panels sponsored by FAO and of possible in-

terest to members of the Society.

Your Committee is following closely the preliminary consideration being given the question of forming a North American Regional Forestry Commission under sponsorship of FAO, composed of the United States, Canada, and Mexico. There are now four such FAO Regional Forestry Commissions —for Europe, Latin America, the Near East, and the Asia-Pacific area. The only major region of the world for which a Forestry Commission has not as yet been formed is North America. These Commissions customarily hold biennial conferences and have established various sub-commissions or committees to work on specific problems of interest to the member countries making up the region. Early action on organizing a North American Forestry Commission is not anticipated.

One meeting of international importance in which the members of the Society will want to take an active part is the Fifth World Forestry Congress to be held in 1960. Although this Congress is still some three and one-half years away, action will be required soon on the question of whether the U. S. Government shall extend an offer to be host for the Congress. There is considerable interest in holding the next Congress in this country. The Western Forestry and Conservation Association already has passed a resolution favoring it and has set up a Provisional Committee to cooperate with the State Department and other agencies in the event it should be decided to make such an offer. Offers by various interested governments are made to the Director-General of FAO, the sponsoring agency, and a special Preparatory Committee will advise the Director-General as to the most suitable place for the next Congress.

Your Committee is recommending to the Council of the Society that it pass a resolution favoring holding the next Congress in this country. A similar recommendation has been made to the American Forestry Association.

The first three Congresses were all held in Europe, and the fourth, in 1954, was held in Asia. Gill reported on the Fourth World Forestry Congress in the January 1956 issue of the JOURNAL OF FORESTRY. These Congresses are open to participants from all over the world who are interested in forestry and forest products utilization. Participants may be forest owners and managers, government forestry officials, representatives of the forest industries and of the equipment industry and of trade in forest products, and those having a general interest in forest conservation and allied fields. By bringing together both public and private foresters, forestry educators, research workers, and specialists in all the various branches of forestry, the Congresses have become increasingly valuable sources of guidance throughout the world in the development of forestry policies and programs.

V. L. HARPER, *Chairman*

Report of the Committee on the History of Forestry

Soon after your present Committee was organized, it decided to review all the various important fields of policy and forestry activities in an effort to discover which one seemed to need closest study. Out of this detailed search came a firm belief that the development of fire control policies in America afforded the greatest opportunity for service. Nowhere was there an adequate treatment of the tremendous changes which have taken place in our country, of the evolution of these changes from the age of no fire control to our present day, highly organized cooperative measures. Nowhere could be found any discussion of the extensive swings from one form of approach to another, the vacillating positions taken by leaders in fire control, the effects of these changes in terms of fire losses or loss of public confidence, and how the inconstant policies were finally resolved. Your Committee felt this could be its most important contribution to forestry and placed the matter before the Council. Meanwhile it found a forester able and willing to undertake the task, had agreed with him upon an outline, and developed the plan. The Forest History Foundation has now taken over the project.

How far the Foundation will meet the objectives planned by your Committee remains to be seen. A historian, not a forester, is employed. The project is limited to the West. It is impossible to forecast how far many policy matters will be covered, but it is our belief that the job the Committee had originally outlined will eventually have to be done. Meanwhile, the ranks of those who participated in the development of fire policy become smaller.

That the Foundation is engaging in this project is a mark on the credit side of the Committee's activities, for, without its extensive study and interest in the matter, it is doubtful if the project would have been undertaken—at least at this time.

At this point it seems desirable to mention that the History Foundation has taken over responsibility for the unfinished manuscript left behind by the Society's beloved Col. W. B. Greeley. It also is interested in the manuscript on the History of the Weeks Act by William L. Hall, a member of your Committee.

Your Committee continues to give attention to many other matters. Many Society members have accepted the task of preparing manuscripts on different subjects. Almost 100 members are now involved on a wide range of subject matter. Some topics are quite local in character, others are on a state, regional, or national basis. The subjects vary from the development of forestry activities in some of the forestry agencies to the evolution of law, working plans, or equipment. The exhaustion of such subjects is not in sight as your Committee searches for additional opportunities to obtain background material.

The Committee tries to encourage others to embark upon local historical projects. For example, it is endeavoring to get some of the forestry schools started on compiling histories of the growth and development of their institutions, why and how the school came into existance, and something of the difficulties experienced by those who made establishment possible.

At this point, your attention is again called to the fact that 1960 will be the 60th anniversary of the Society. In addition, three states will be able to celebrate their diamond jubilee, as forestry officially began in them 75 years ago. It is hoped that each of the three states—Ohio, New York, and California—will begin early to plan a suitable celebration, and as a part of this that they will publish a history of their organization. California has already made a start on such a history.

The "History of State Forestry," sponsored by the Association of State Foresters, is still further delayed. Manuscripts for most of the states have been completed and edited. It is to be regretted that publication of this extraordinarily valuable document has not yet been possible, though it was begun several years ago. The Committee has offered its services to

the editor in an effort to speed its completion.

In the past year your Committee has also embarked upon a new field of work, that of stimulating the preparation of biographies of some of our former associates whom we have called "Foresters of Distinction." Biographies have been published for some of our departed great. A review of many of these has shown that in some instances the biographies appear adequate in scope and content. Nothing further is planned for these, but steps have been taken to enlist the aid of cooperators in preparing biographies for those whose lives seem to warrant some further recognition.

This venture has led your Committee to encourage the preparation of biographical material to be published in that section of the JOURNAL known as "We Present." Although the Committee is stimulating the preparation of such articles, it would welcome unsolicited material so it could drop this phase of work for some other activity.

Your Committee is much concerned over some facts revealed by a study of a recent book by the Forest History Foundation entitled *Forest History Sources*. This is a reference guide and index to original documents. In it is no reference to old files or data from any state forestry agency. There are no similar records for any of our forest schools. Apparently no depository contains the records of any of the many conservation associations which helped put forestry and conservation on the map. Omission of the records of these groups makes one wonder. The lack of any reference to them may be due to failure to contact the right library or other depository, but their universal omission makes this unlikely. In some cases, little or no care has ever been taken to insure the preservation of records. In one instance, many file drawers of old records for one major regional project were dumped unceremoniously in a corner of an abandoned building on a fair grounds. In another, field data and manuscript material disappeared while being stored in the attic of a state capitol building. Original field reports in one office were destroyed because the official in charge thought they were worthless. Many of us know of similar instances.

How far such practices are currently tolerated in organizations concerned with forestry matters in unknown. We hope they are getting scarcer and are not condoned. We also hope that all forestry organizations make a practice of preserving such material and that the apparent absence of the missing material from depositories is due to their current use rather than to permanent loss. The Committee hopes that all agencies will make a practice of turning over all such material to some archives where it will be available to some historian of the future.

Your Committee would like to emphasize to all members of the Society, the very great necessity—indeed the obligation—of preserving the records of what goes on today. Only by making sure that transactions are recorded, data preserved, and records safeguarded, can the profession be assured that what is being done today will be properly and fully appraised. Your Committee feels deeply that preservation of such material is essential. The records of what we do today is part of the history of tomorrow.

Your Committee thanks you for the opportunity to serve you and the profession.

E. H. FROTHINGHAM
W. L. HALL
RALPH S. HOSMER
WILLIAM D. MILLER
ROLAND ROTTY
R. K. WINTERS
W. L. SCHIPULL
E. N. MUNNS, *Chairman*

Report of Council Meeting

A regularly called meeting of the Council was held in the Peabody Hotel, Memphis, Tennessee, on October 14, 1956.

All members were present: President DeWitt Nelson, Vice President G. A. Garratt, B. E. Allen, P. A. Briegleb, C. H. Coulter, S. G. Fontanna, M. K. Goddard, E. F. Heacox, J. S. Illick, J. H. Stone, and H. J. Vaux; together with Henry Clepper, executive secretary.

The first order of Council business was a unanimous expression of gratification in having Miss L. A. Warren, business manager, return to duty after her illness of the past summer.

Committees for 1957 Meeting

Committee chairmen for the 1957 annual meeting were approved as follows, on motion by Mr. Heacox, seconded by Mr. Coulter.

General chairman, Hardy L. Shirley, College of Forestry, Syracuse 10, N. Y.

Program chairman, Paul M. Dunn, St. Regis Paper Company, 150 East 42nd Street, New York 17, N. Y.

Chairman of Committee on Arrangements, Svend Heiberg, College of Forestry, Syracuse 10, N. Y.

The dates of this meeting are November 10-13, 1957. The Hotel Syracuse will be headquarters for the meeting.

The 1958 annual meeting will be held in Salt Lake City, September 28-October 1.

Annual Meeting in 1959

Under the Society's custom of scheduling annual meetings in five general regions of the United States under a rotation system, the 1959 meeting would normally be held in the North Central States. However, the Canadian Institute of Forestry has accepted an invitation by the Council to hold a joint meeting with the Society in 1961. The preferred region for this meeting is the Lake States.

In view of this development the Council, on motion by Mr. Stone, seconded by Mr. Heacox, voted to schedule the 1959 meeting on the West Coast. San Francisco is the designated city; the dates will be announced later.

The Society's 60th anniversary meeting will be held in Washington, D. C. in 1960, by previous Council action.

Annual Meeting in 1961

At a meeting of the Board of Directors of the Canadian Institute of Forestry, held October 2, 1956, the invitation tendered by the Society of American Foresters to hold a combined meeting in the Lake States in 1961 was unanimously approved.

The headquarters city and the dates of this meeting will be announced later.

Nominating Committee for 1957 Biennial Election

The Constitution (Article VIII, Section 1) provides that a Nominating Committee shall be appointed by the President not later than April 1

of the year in which the biennial election of the Council is to be held.

The duties of this committee are to set the date of the election which, as provided by Bylaw 40, shall not be before December 1 or later than December 15; and to provide that there shall be at least two candidates for the office of president and at least nine candidates for the Council.

The following Nominating Committee for the election of 1957 was authorized on motion of Dr. Illick, seconded by Mr. Briegleb, and appointed by President Nelson.

Chairman, J. H. Johnson, Chesapeake Corporation, West Point, Va.

S. T. Carlson, National Park Service, Santa Fe, N. Mex.

Albert Engstrom, State Division of Forestry, Capitol Building, Oklahoma City, Okla.

James E. Sowder, U. S. Forest Service, Bend, Ore.

Harry E. Troxell, Jr., School of Forestry, Colorado A & M College, Ft. Collins, Colo.

Honorary Member Elected

On the nomination of the Committee on International Relations, the Council unanimously elected D. Y. Lin, president of Chun Chi College, Hong Kong, to Honorary Membership.

Dr. Lin is a graduate of the Yale University School of Forestry (1914).

World Forestry Congress

The following statement was submitted to the Council by V. L. Harper, chairman of the Committee on International Relations.

The Fifth World Forestry Congress will be held in 1960. The question of which nation will be host to the next Congress has not yet been decided.

The first World Forestry Congress was held in Rome in 1926. The second was held in Budapest in 1936. The third was in Helsinki in 1949, and the fourth in Dehra Dun, India, in 1954.

The first two Congresses were held under the auspices of the International Institute of Agriculture, whose Sixth Annual Assembly in 1922 had voted to invite all nations to a conference to consider world forestry problems. The second two Congresses were held under the auspices of the Food and Agriculture Organization of the United Nations (FAO), the world agency that took over the functions of the now extinct International Institute of Agriculture.

The Congresses have no continuing status and depend largely upon a sponsoring body, such as FAO, for their initiation. The organization and cost of a Congress, however, are the responsibilities of the host country.

The Congresses have grown in size and scope over the years. At the third there were participants from 27 countries; at the fourth, 47 countries. The number of persons attending recent Congresses has ranged between four and five hundred. Participants from the United States have attended all past meetings.

The purpose of a World Forest Congress, which is nongovernmental in nature, is to provide a medium for the exchange of information and personal views of participants. The subjects programmed for discussion have been varied, reflecting changing emphasis on the numerous technical aspects of forest production and forest-products utilization. The proceedings of the Congresses and the summaries and recommendations which the participants have jointly framed and agreed to have provided a useful source of information to many agencies and individuals. Also, it is noteworthy that the recommendations of the last two Congresses have had a considerable influence on the orientation of FAO's program of work in forestry.

Among the features of all past Congresses have been exhibits and field excursions, as well as meetings for technical discussions. The exhibits have included a wide variety of material representing the work and interests of all agencies, public and private, engaged in forestry, forest products industry, the manufacture of equipment for forestry and industry operations, and in fields allied with forestry.

If the next World Forestry Congress is to be held in the United States, several steps are involved. The first would consist of an expression of interest on the part of forestry and forest-industry groups in having the next Congress in the United States and a willingness to support it if our country's offer is accepted. This expression would have to be in terms that could be translated into monetary considerations as well as the willingness to contribute time and effort. In 1952 when the question was considered of offering to be host for the Fourth Congress, the Department of State estimated the total cost to be somewhat more than $100,000 of which only a small part could be provided by the U. S. Government.

The second step would be an official offer by the U. S. Government to be host, to be in the hands of the Director-General of FAO by at least February 1, 1957. If more than one country makes an offer, the Director-General has proposed that he would convene a meeting of a special Preparatory Committee set up by the Fourth Congress and leave it to this Committee to recommend the host country as well as the principal topics of discussion for the program of the Congress.

The third step would be the final decision of FAO at its biennial Conference in Rome in 1957 accepting the offer of the country selected to be host to the Fifth Congress.

The fourth step, assuming that the offer of the United States is accepted, would be to begin the intensive preparations for the 1960 Congress. A World Forestry Congress is a large undertaking, and previous host countries have found it takes up to three years to complete all the necessary arrangements. The host country sets up an Organizing Committee to have charge of plans and arrangements, and the Director-General of FAO customarily requests the National Committees of all FAO member countries to cooperate with the Organizing Committee in publicizing the Congress, supplying information and collecting requests from prospective participants.

After consideration of the foregoing statement, the Council, on motion by Mr. Coulter, seconded by Mr. Stone, unanimously adopted the following resolution:

The Council of the Society, taking note of:

1. The fact that all four previous World Forestry Congresses have been held in Europe or Asia,

2. The timeliness of the United States offering to be host to the Fifth World Forestry Congress, scheduled for 1960, especially in view of this country's position as a world leader in technological development and its present large program of technical assistance to the underdeveloped countries,

3. The benefits to be derived through impressions gained and contacts made in this country by several hundred visitors from aboard given an opportunity to see our accomplishments in forestry and forest-products utilization, and

4. The mutual gains from an exchange of ideas and experience with forestry leaders from many countries and the encouragement of better understanding and closer cooperation internationally, endorses the proposition that the United States should offer to the FAO to be host to the Fifth World Forestry Congress and directs the

Society's officers to take appropriate steps to cooperate with other interested agencies, including the U. S. Interagency Committee on Relations with FAO, in giving effect to this resolution.

Amendment of Constitution

Article IV, Section 2 (first paragraph) reads as follows:

"Applications for the following grades of membership may be endorsed by three voting members: Student Membership; Affiliate Membership when applicants qualify on the basis of education; and Junior Membership when applicants are graduates of approved curricula in accredited schools."

All applications for the Student Member grade are now processed in the schools of forestry. Practically all applications for the Junior Member grade are now received from graduates of approved curricula or are Student Members routinely advancing to Junior Membership.

A single signature of a voting member would accomplish the same results on these two types of applications. Hence, in order to reduce the amount of work involved in handling applications at the schools and by members generally, the Council, on motion by Mr. Stone, seconded by Dr. Vaux, voted unanimously to authorize a ballot on the amendment of Article IV, Section 2, to provide for one signature instead of three.

The proposed amendment would read as follows:

Applications for the following two grades of membership may be endorsed by one voting member: Student Membership and Junior Membership when applicants are graduates of approved curricula in accredited schools. Applications for Affiliate Membership who qualify on the basis of education may be endorsed by three voting members.

Project to Locate Natural Areas

John F. Shanklin, chairman of the Committee on Natural Areas of the Division of Silviculture, presented the following statement to the Council.

The Committee on Natural Areas was organized in February 1947. It is now nearly 10 years old. I have had the honor of being its chairman since its inception, although I have had personal doubts as to the advisability of any member of the Society retaining such a chairmanship for such a long period. There is, however, a desirable goal which I would like to see the Committee reach before I officially tender my resignation.

Since 1947, the Committee has approved 82 natural areas, which contain 44 of the 106 recognized forest types in the eastern United States. During the past year, the Committee has taken three specific actions which we hope will reduce appreciably the number of forest types not now included within the natural area system.

First, the Committee has reached an agreement with the National Park Service whereby that Service in connection with its planning under the title of "Mission 66" will designate natural areas within certain portions of the national parks and monuments which are being set aside from any physical development. The Committee hopes to locate within the national park system most of the missing western forest types.

Secondly, the Committee has organized a system of liaison officers served by each Section to represent the Committee in each of the geographical areas. These liaison officers should be of material assistance to the National Committee in locating prospective natural areas. The Committee trusts that the work of these liaison officers will likewise materially reduce the number of missing cover types.

The third action of the Committee requires your concurrence. The Committee, after considerable reflection, has come to the conclusion that we need to undertake a field investigation to locate timber land containing those types which are presently missing from the approved natural area list and especially those missing types which are native to the eastern United States. Accordingly, the Committee has approved a two-year budget, as follows:

Salary @ $8,000 annually	$16,000
Per diem @ $10.00 a day 180 days a year	3,600
Car mileage @ $0.10 per mile 15,000 miles per year	3,000
Contingency and miscellaneous	2,400
Total	$25,000

It is our intention, if it meets with your concurrence, to approach a foundation either directly or in conjunction with the Nature Conservancy for a grant of sufficient size to meet this budget. If this meets with your concurrence, the Committee would appreciate your assistance as to how we might undertake to interest a foundation in this matter and what foundations would be the most logical to approach.

I might say in closing that the Committee has in mind a properly qualified forester who will be available when this program is initiated.

JOHN F. SHANKLIN, *Chairman,*
Committee on Natural Areas

Proposed Study of Forestry Education in the South

The following statement was presented to the Council by Dr. John K. Folger, research associate of the Southern Regional Education Board, Atlanta, Ga. It proposes a study to determine the future demand for professional trained foresters in the South.

We would like to be able to predict, with reasonable accuracy, the probable number of new foresters that could be employed in each five-year period for the next twenty years in the South. It would be desirable to break this demand down into various components such as demand by the federal government, by state government, and by private industry. In this connection it would also be desirable to know what proportion of forestry graduates are employed in sales, in buying lumber, and in other activities where their professional training is less essential. It would also be very helpful to have a study of the economics of good forest management to determine what would be the optimum number of professional foresters per million acres of forest from an economic point of view. Such a study would indicate what the upper level of demand for foresters is. If there could also be some analysis of reasons for under utilization of foresters, this would help us predict the rate of growth of demand for foresters. In other words, if a forest owner could make more money by hiring more professional foresters to manage his holdings, why doesn't he hire them? These studies would assist a great deal in providing some accurate estimates of the demand that will be placed upon the schools to supply professional personnel.

We also need studies of the student demand for forestry training and ways that this demand can be increased. What are the characteristics of people who seek forestry education today? What proportion of them come from farm backgrounds? What proportion from large cities? What reasons do students give for entering forestry training? What reason do students give for not wanting to enter forestry training? Why do students drop out of the forestry program? Answers to these and similar questions would help in designing effective recruiting programs. How important would more information (bulletins, brochures, etc.) be in increasing enrollment? How big a factor would additional scholarships be at the graduate level? At the undergraduate level? Are there special places (such as rural high schools, or agricultural college freshmen classes) where recruiting efforts are likely to be especially effective because the students in forestry have the same characteristics as these students?

The S.R.E.B. would like to encourage studies of any of these problems, as a means of helping improve forestry education in the region.

Following discussion of the foregoing proposal the Council, on motion by Dr. Vaux, seconded by Dr. Garratt, voted to instruct the executive secretary to notify the Board that the Society itself proposes to undertake a nation-wide study of forestry education. Provided funds become available for the study, the Society will seek the Board's cooperation for an intensive investigation of the supply and demand for foresters in the South.

W. B. Greeley Memorial

At the Council meeting held February 19-21, 1956, a committee was ap-

pointed to consider a suitable memorial to the late William B. Greeley, Fellow of the Society, former President, and a Council member for nine years. Named to the committee were E. F. Heacox, chairman; J. H. Stone, and G. A. Garratt.

The committee recommended that S.A.F. members be invited to contribute to a fund to provide scholarships to qualified undergraduate students of forestry. On motion by Mr. Heacox, seconded by Dr. Illick, the Council unanimously authorized the committee to solicit donations for the Greeley Memorial Scholarship Fund. Dr. Garratt was specifically requested to head up this feature of the committee's assignment.

Section Bylaws Approved

Proposed amendments to the bylaws of the Appalachian Section and the Columbia River Section were submitted to the Council in accordance with Article XI, Section 3 of the Constitution.

The bylaws were approved with suggestions for minor revisions.

Committee on History

Elsewhere in this issue is published a report of the Committee on the History of Forestry. The Council regrets that, because of limited funds, it has not been able to accede to Committee requests for financial assistance to carry forward the Committee's projects.

On motion by Mr. Stone, seconded by Dean Fontanna, the Council unanimously voted to request the Committee to bring together whatever historical material and writings can be obtained from pioneers in the profession, and to cooperate with the Forest History Foundation in making it available.

Committee on Forestry Career Counselling

The Council of Forestry School Executives, composed of the heads of the schools offering professional curriculums in forestry, held a meeting in Memphis on October 13, 1956, and adopted the following resolution:

The Council of Forestry School Executives recommends to the Council of the Society of American Foresters that it consider the establishment of a committee on student recruitment within the Society to review the existing serious problem of interesting an adequate number of students in the profession of forestry to explore the role that the Society might play in meeting this problem, and to call the matter to the attention of the Society's Sections and Chapters.

ERNEST WOHLETZ, *Chairman*

On motion by Dr. Vaux, seconded by Mr. Briegleb, the Council unanimously authorized the President to appoint a standing Committee on Forestry Career Counselling. The duties of the committee are to develop a program for obtaining an adequate number of students for careers in forestry. The committee was asked to make use of the facilities and interests of the Sections and Chapters.

Miscellaneous

The report of Arthur B. Meyer, editor of Society publications, is published elsewhere in this issue. On motion by Mr. Briegleb, seconded by Mr. Vaux, the Council voted unanimously to commend him for his good work.

On the invitation of President Nelson, the Council decided to hold its next regular meeting during the last week in June in Berkeley, Calif.

Proposed Membership Changes

At the Society Affairs session October 15, 1956, of the Society's annual meeting in Memphis, three important items of membership were discussed by the Council and the official delegates representing the several Sections.

These items had to do with:

1. Proposed repeal of Bylaw 75 which provides that nonmembers of the Society may become Associates of the Sections.

2. Proposed increases in dues for Associate Members and Affiliate Members.

3. Proposed consolidation of the Junior Member and Member grades.

There follows an analysis of the proposals and the discussion, prepared by Henry J. Vaux, chairman of the Council Committee on Membership. The two other members of the Committee are B. E. Allen and E. F. Heacox.

On the recommendation of this Committee the Council herewith submits these proposals to the membership for consideration. The membership is requested to discuss the proposals in Section meetings. The Sections are asked to report back to the Council the consensus of their members on each of the three proposals.

A simple expression of opinion as to whether a Section favors or does not favor each proposal is all that is requested. Long Section reports are not needed.

Chapters that take polls on the proposals are requested to submit the results through the Sections in order that all reports may be consolidated under the 21 Sections.

The next meeting of the Council will be held in late June 1957. The results of Section opinion polls should be sent to the Society office, preferably not later than June 1, 1957.

Analysis of Proposed Membership Changes

Three matters dealing with membership qualifications have been called to the attention of the Council and are currently under consideration. The Council solicited comment and discussion by Section representatives at the Society Affairs session at the annual meeting in Memphis on October 15, 1956, and now submits the following information for further consideration and discussion by the membership at large.

Repeal of Bylaw 75

Bylaw 75 reads as follows:

"Nonmembers of the Society may become associate members of a Section but may not become regular members or serve as officers of a Section. This applies to former members of the Society whose membership has been terminated, as well as to those who never have been members."

Under this bylaw people who are not qualified for any grade of membership of the Society of American Foresters are still able to establish formal affiliation with individual Sections. The principal advantage of the bylaw appears to have been in sparsely settled areas where there were insufficient qualified members to sustain an active forestry group. The bylaw makes it possible to include loggers, tree farmers, cattlemen, legislators, and many other people having a community of interest with foresters in a Section and to take advantage of the benefits accruing from such formal affiliation. There is opposition to this bylaw, however, on the following grounds:

1. The reasons for the original establishment of the bylaw (described above) are no longer valid in many areas;

2. The general public is not aware of the distinction between the grade of Section Associate and the several

grades of membership in the Society, and may thus be misled as to a man's technical competence on the basis of his Section Associate status;

3. Some members believe it unwise to have, in effect, a different membership standard at national and sectional levels; and

4. It is possible that there has been some abuse by Section Associates posing as foresters on the basis of this kind of Section membership.

The Council Membership Committee has recommended to the Council that Bylaw 75 be repealed. Such repeal would eliminate the difficulties mentioned above but would not prevent invitation of nonmembers of the Society to participate in Section programs as guests of the Section. Action on the matter of repeal of Bylaw 75 can be taken by the Council. But before acting on the recommendation for repeal the Council solicits full discussion of the issue.

At the Memphis meeting this matter was discussed by all Section delegates who were present.

A delegate from the New York Section, supported by delegates from a number of others, pointed out that, if the bylaw were repealed, Sections that had state senators, legislative representatives, and others on their rolls as Section Associates, would be subject to embarrassment should it be necessary to advise these people that they were no longer entitled to this status.

After discussion delegates from nine Sections indicated approval of the repeal of Bylaw 75, provided provision is made to retain in their present status all individuals who are now recognized as Associate Members of Sections. Delegates from two Sections supported outright repeal of Bylaw 75 without the "grandfather clause" noted above. Delegates from three Sections preferred retention of Bylaw 75 in its present form.

Dues for Associate and Affiliate Members

The Constitution provides $6 per year dues for both Affiliate and Associate Members. This rate has applied since the time when the subscription price of the JOURNAL OF FORESTRY was also $6. In view of the fact that the subscription price of the JOURNAL is now $7.50, the question has been raised as to whether the present dues are appropriate.

An Associate Member is a scientist (nonforester) working in a field closely allied to forestry, or a nonforester who has made an outstanding contribution to public or private forestry. Associate Membership is a terminal grade, and no advancement to voting grade is possible. There are currently 247 Associate Members.

Affiliate Members are (*a*) graduates of nonaccredited forestry schools who have completed the basic forestry courses, (*b*) persons who qualify for membership through a combination of education and practical forestry experience, and (*c*) graduates of accredited forestry schools who have majored in a curriculum which did not include all of the five basic professional forestry courses. Affiliate Members may upon proper qualifications be advanced to Junior Members, although a substantial proportion of the members in this grade remain as Affiliates permanently. There are now 710 Affiliate Members.

The Membership Committee of the Council has recommended that dues for Associate Members be increased to $9 per year. This would cover the costs of the JOURNAL plus a reasonable charge for those membership services which are involved. The business office points out that such an increase in dues may curtail interest in this grade of membership. However, the Membership Committee believes that there is no need to carry such members at dues which appear to be less than the average cost of handling, and that $9 per year is in no sense a hardship on men of the maturity and stature of Associate Members if they are firmly interested in the Society.

The Membership Committee has recommended to the Council that dues for Affiliate Members be changed from the present $6 per year level to $6 per year for the first three years of membership, $9 per year for the next three years, $12 per year thereafter. In addition, the Committee recommends that when an Affiliate Member advances to a higher grade, his tenure as an Affiliate shall be counted toward determining his dues bracket (e.g. a member who spent three years as an Affiliate and was then advanced to Junior Member would pay $9 per year during the first three years in the latter grade.) As a result Affiliate Members' dues would be in conformity with those of Junior Members and Members for men with an identical number of years of membership. At the same time an Affiliate who remains permanently in that grade would have his dues level off at $12 per year instead of the $15 level now paid by Members.

The business office points out that such an increase would probably curtail interest in the Affiliate grade. The Membership Committee believes that for those on the way to regular membership it is reasonable to have a dues pattern similar to that for Juniors and Members and that, for those remaining in the Affiliate grade, the proposed schedule is consistent with the maturity and economic status of the men involved.

In connection with both the Associate and Affiliate grades, it should be noted that men entering these grades pay a $5 admission fee.

The recommendations described above have been received by the Council which has referred the matter to the membership for discussion in Section and Chapter meetings prior to determination by the Council of whether or not the recommendations should be submitted to a referendum ballot.

At the Memphis meeting there was considerable discussion by Section delegates of these dues proposals. The consensus of viewpoint appeared to be that it was reasonable to set dues for Associate Members at the cost of the JOURNAL OF FORESTRY plus a small amount for membership handling costs. A majority appeared to believe that $9 was a fair dues based on this principle.

A considerable variety of view was expressed with respect to Affiliate Members, but in general the feeling seemed to be that dues for this grade too should be related to costs. The sliding scale proposal outlined above was suggested independently by two or three Section delegates, whereas others had not had an opportunity to consider such a proposal. Some delegates argued that the ceiling on dues for Affiliate Members who do not advance to Junior grade should be $9.

Consolidation of Junior and Member Grades

A proposal has been received by the Council Membership Committee from a member with much experience in membership matters that the existing Junior and Member grades be consolidated.

At the present time Junior Members are admitted to the Society on the basis of graduation from an accredited forestry curriculum or on the

basis of a combination of education and qualifying experience. Junior Members advance to Member at the end of 3 years on application and endorsement, or at the end of 6 years automatically. With more than 4,800 Junior Members and 4,500 Members the existing division into the two grades is a major feature of the membership structure.

The new proposal is to consolidate these two grades, leaving a single membership grade to cover those now in Junior Member and Member status, with standards and procedures for admission presumably similar to those which now apply to Junior Membership.

The arguments for this proposal appear to be:

1. It would greatly simplify administration of membership and would reduce costs.

2. It would involve much less work in the Washington office and in the Sections on membership matters, particularly those involving advancement from Junior Member to Member.

3. The existing distinction between Junior Member and Member is so slight as not to be worth the trouble it takes to maintain two grades.

The arguments against the proposal appear to be:

1. It would admit most members to full membership status in the Society on the basis of academic qualifications alone.

2. A man could become a Member of the S.A.F. without having had any practicing professional experience whatsoever.

3. The proposal would eliminate any possible chance for a review of a Member's qualifications after his initial admission, and would place an even heavier burden for selection of Members of the Society on the standards and administration of the professional schools.

The Membership Committee of the Council believes that the present system is indeed somewhat deficient in that it requires substantial work to administer, but actually makes little real distinction between Junior and Member grades other than mere term of service. Within the Committee there is a feeling however that the answer lies not in the direction of consolidation but rather in strengthening the distinction between Junior and Member grades.

The Committee believes that there should be a clear recognition of (1) a probationary grade and (2) a grade reflecting confirmed professional competence. It is believed that as the Society grows it is increasingly important to insure that the membership structure reflects strong professional qualifications.

On recommendation from the Membership Committee the Council has adopted a resolution that this matter be placed before the membership for preliminary discussion; that the membership be requested to give careful thought to it in the Sections; and that the Sections report back to the Council the feeling of their members in this matter.

HENRY J. VAUX, *Chairman*
Council Membership Committee

Report of the Division of Education

The Division of Education met at 8:00 p.m., October 15, 1956 in the Peabody Hotel, Memphis, Tenn. The meeting was conducted by the chairman, W. F. McCulloch. About 100 people were in attendance.

The program, prepared under the direction of W. B. DeVall of the Alabama Polytechnic Institute, centered on the theme "Regional Planning for Forestry Education in the South." This theme was developed and reported in detail by five speakers who have themselves taken part in the southern planning program.

1. "Objectives of Regional Planning: the Committee at Work." Clarence F. Korstian, School of Forestry, Duke University, Durham, N. C.

2. "Activities of a Regional Council." Winfred L. Godwin, Southern Regional Education Board, Atlanta, Ga.

3. "Preforestry Training and Transfer within the Region." Alfred D. Folweiler, Texas Forest Service, College Station, Tex.

4. "Recruitment Efforts in the South." Clemens M. Kaufman, School of Forestry, University of Florida, Gainesville, Fla.

5. "Extending Regional Planning to Pulp and Paper Technology." Richard J. Preston, School of Forestry, North Carolina State College, Raleigh, N. C.

Following presentation of the papers the chairman thanked W. B. DeVall for the excellence of the program.

In the short business sessions that followed the nominating committee, R. C. Bryant, R. E. McDermott, and P. Y. Burns, chairman, presented the following slate of officers:

Chairman—David M. Smith, Yale School of Forestry, New Haven, Conn.

Vice-chairman—A. Bigler Crow, Louisiana State University, Baton Rouge.

Secretary—Peter W. Fletcher, University of Missouri, Columbia.

There were no nominations from the floor and the above officers were elected by unanimous ballot.

The meeting was adjourned at 9:30 p.m.

A. BIGLER CROW
Secretary

Report of the Division of Forest Economics and Policy

Seven papers on certain economic aspects of southern timber production problems were presented to an audience of 350 members at the Division's afternoon session of October 16, 1956 in the Peabody Hotel, Memphis, Tenn. Chairman Albert C. Worrell presided.

R. R. Reynolds led off with a report on costs and yields from a forested tract of 1,000 acres on the Crossett Experimental Forest. Annual net returns from this tract have averaged 23 percent per year on the original investment—or 6 percent in terms of present prices for land, labor, equipment, and stumpage. Solon Barraclough, discussing experiences in New England and in the vicinity of the Ames Plantation, Grand Junction, Tenn., declared that such information was helpful in interesting owners in forestry but stated that much more specific information was needed to help an owner decide what management practices best suited his specific situation. Thomas G. Herndon, School of Forestry, University of Florida, described several studies now in progress and the nature of additional research needed to obtain the information sought by Barraclough.

Robert K. Winters, forest economist, U. S. Forest Service, Washington, D. C., traced the development of various public programs and their probable effect on timber production in the South. One of the most important functions of public forestry programs in the past, Winters noted, has been to "set the ball rolling" in the adoption of progressive forestry practices, but because of continuing needs and increased public interest in forestry research, education, and tech-

nical assistance, public programs can be expected to have a very important effect on future timber supplies.

The probable effect of closer utilization on future timber supplies was the subject of a paper by Walter C. Anderson, Southeastern Forest Experiment Station. Probable effects on timber-growing practices, timber prices, and production techniques were discussed.

The possibility of obtaining valid and useful information on current market prices of forest products and the probable effect on timber production of making such information available to owners was evaluated by Sam Guttenberg of the Southern Forest Experiment Station.

Questioning the usefulness of market pulpwood prices, Carl Stoltenberg suggested comparative production costs as a sounder basis for paper companies to use in evaluating alternative ways of increasing pulpwood production. Such production processes as more intensive utilization, cultural practices on company land, assistance to nearby landowners, and sawmill-residue use were discussed.

Chairman Worrell presided at a business session attended by about 30 members. Mr. Duerr suggested taxation as the subject for next year's Division meeting. Mr. Stoddard suggested marketing as another subject worthy of consideration. Mr. Vaux recommended that more time be provided for discussion, particularly when papers have important policy implications.

Mr. Duerr, chairman of the Division's committee on research, asked if there was interest in a survey of current research in forest economics. Considerable interest was expressed.

Mr. Vaux moved that appropriate steps be taken to drop the words "and Policy" from the Division's name, renaming it the "Division of Economics." Vaux stated this would "help distinguish between economics, an analytical tool, and policy, a field of far broader implications." Furthermore, he reasoned that "policy is a subject of concern to members of not just one but all divisions. And it is unfair to ask the Division's speakers in the few minutes available to them to consider all phases of policy issues, as the present title of the Division would imply." Discussion of the motion brought comments that "some are members of the Division because of the inclusion of policy matters" and that one "can't draw a line between economics and policy." All agreed that policy implications of economic analyses should be considered by speakers, regardless of the Division's name, and similarly that publicity be given the motion before formal action is taken by the Division's executive committee. Motion passed (vote 13-8).

Mr. Stoddard presented the nominating committee's report. The following officers were elected:

Chairman—Carl H. Stoltenberg, Northeastern Forest Experiment Station, Upper Darby, Pa.

Vice-chairman—Blair Hutchison, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Secretary—Ernest M. Gould, Harvard Forest, Petersham, Mass.

CARL H. STOLTENBERG
Secretary

Report of the Division of Forest Management

The Division of Forest Management convened at 9 a.m. October 17, 1956 in the Peabody Hotel, Memphis, Tenn. The full day session was well attended.

Following the presentation of papers Division officers were elected as follows:

Chairman—Gerald S. Wheeler, U. S. Forest Service, Laconia, N. H.

Vice-chairman—Dean Walter F. McCulloch, Oregon State College, Corvallis.

Secretary—E. W. Littlefield, New York Conservation Department, Albany.

Other business of the Division included the submission of a report and recommendations by a Committee to Investigate Ambiguity in the use of the Scribner Log Rule, L. R. Grosenbaugh, L. A. Hargraves, Jr., and E. T. Hawes, chairman. The report of this committee follows.

There has long been a serious ambiguity in the use of the Scribner Rule. This situation arises from the fact that the original Scribner Rule did not have values for logs smaller than 12 inches in diameter. Over the past years, there have been many independent attempts to extend the Scribner Rule to cover the diameters from 6 to 11 inches (and beyond 44 inches). The tabulation in Table 1 shows some of the various small-log extensions now in use.

This situation has caused considerable misunderstanding where scalers use "A" extension values on small logs which have been cruised with volume tables based on any of the other three extensions. In most instances, both parties believe they are using the same set of values.

It is the recommendation of this committee that the Society of American Foresters go on record as deploring the use of the "A" extension, and that the Society of American Foresters request manufacturers to refrain from further sale of sticks using the "A" extension when their present stock is exhausted, and to clearly label all sticks as to Scribner extension used (either Decimal C or Minnesota Standard), so they may be easily identified by the users.

It is realized that rules with "A" extension values are currently widely used. The committee does not see how this situation can be corrected but

TABLE 1.—COMPARISON OF SCRIBNER LOG RULE EXTENSIONS FOR BOARD FOOT CONTENTS FOR 16 FOOT LOGS

Dia. small end of log	"A" extension[1]	Dec. "C" extension[2]	Formula extension[3]	"Minnesota Standard" extension[4]
6	9	2	12	18
7	16	3	21	28
8	25	3	30	32
9	36	4	42	40
10	49	6	55	50
11	64	7	70	65

[1]Sold in local hardware stores in South. Manufactured by Lufkin Rule and others.
[2]From 1941 National Forest Scaling Handbook, page 62, used by U. S. Forest Service.
[3]Values used in constructing tree volume tables as found in "Tables for Estimating Board-Foot Volume of Timber," U.S.F.S. Mesavage and Girard and "Volume Tables, Converting Factors and Other Information Applicable to Commercial Timber in the South," R-8-U.S.F.S. Obtained by formula $V=0.79D^2-(2D+4)$ Table 46, p. 155 "Timber Cruising" by J. W. Girard and S. R. Gevorkiantz, U.S.F.S. October, 1939, based on Bruce and Schumacher's earlier derivation.
[4]Log Values on tree and log scale stick sold commercially and popularized by R-8 U.S.F.S. about 1940. Values taken from "Timber Cruising" page 153, Table 44, Girard & Gevorkiantz, U.S.F.S. Oct. 1939. The legal rule in Minnesota.

hopes that the manufacturers will discontinue the production of "A" extension rules so that this ambiguity will not be perpetuated forever.

J. WALTER MYERS, JR.
Chairman

Report of the Division of Forest Products

The meeting of the Division of Forest Products was held in the Peabody Hotel, Memphis, Tenn., October 16, 1956, with Chairman Russell Stadelman presiding. Prior to the afternoon meeting, the speakers and the officers of the Division met for a luncheon in order to get acquainted. Much interest was noted in the program with the attendance estimated at over 350. The program for the meeting followed the general theme, "Forestry Faces Forward," and five papers were presented illustrating the tremendous developments that have taken place in recent years as the result of many technological developments.

S. V. Sihvonen of the Crossett Forestry Division presented a paper on "Utilization—The Key to Better Forestry at Crossett."

John W. Lehman of the Tennessee Valley Authority covered the subject, "Five-year Trend in Circular Sawmill Operation in the Tennessee Valley."

At this point in the program, Chairman Stadelman presided over a short business meeting. A report of the nominating committee was presented by Mark Lehrbas and the following officers were elected for the 1956-57 year:

Chairman — Stephen B. Preston, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

Vice-chairman — Harry E. Troxell, School of Forestry and Range Management, Colorado A & M College, Ft. Collins, Colo.

Secretary-Treasurer — Bernard W. Granum, Forestry Supervisor, Iron Range Resources and Rehabilitation, Hibbing, Minn.

The many responsibilities of the general chairmanship of the meeting required Mr. Stadelman to turn the chair over to chairman-elect Mr. Preston, who conducted the remainder of the meeting.

The third paper on "Research on Hardwoods for Pulp and Paper," was presented by R. J. Seidl of the U. S. Forest Products Laboratory.

George C. Lucas, president, May Brothers, Inc., Garden City, presented an informative paper on "Flotation Logging." An excellent set of colored slides illustrated his talk.

The fifth paper on "New Developments in Veneer and Plywood Industry in the South," was presented by Walton R. Smith, Southeastern Forest Experiment Station.

In concluding the program, James S. Bethel, North Carolina State College, was asked to comment on Mr. Smith's paper. He emphasized the real opportunities available to the southern veneer and plywood industry, but did risk a pessimistic note to the picture by citing one of the very real problems currently facing the hardwood-plywood manufacturers in meeting today's market with foreign competition. The answer to this problem is not at all clear. Members of the SAF might well give some thought to this problem, for it is a problem that may rise in other areas of forest products production and sale.

HARRY E. TROXELL
Secretary

Report of the Division of Forest Recreation

The meeting convened at 8 p.m., October 15, 1956 in the Peabody Hotel, Memphis, Tenn. Donald P. Duncan, chairman, presided. Other officers present were James P. Gilligan, vice-chairman, and F. C. Koziol, secretary.

Chairman Duncan explained to the assembled foresters that under the theme "Forestry Faces Forward" forest recreation was an integral part of forestry progress in the nation. The increasing volume of recreation use of all types on public and private forest lands of all categories indicates a national trend that is growing in significance each year. The purpose of the Division he said is to explore the various facets of forest recreation problems and present them to the profession.

The five papers were presented as scheduled except that John M. Herbert was unable to be present due to hospitalization following an operation. His prepared paper, however, was filed and will be printed as part of the proceedings of the convention.

Attendance at the meeting was about 100 persons. Discussion following the presentation of papers was limited due to lateness of the hour. Officers of the Division recommended that future evening sessions be avoided if possible, since daytime meetings always result in better attendance and more participation interest.

The nominating committee consisting of J. V. K. Wagar, Harthon Bill, and James H. Tyndall presented its report which recommended that the vice-chairman be advanced to chairman and the secretary to vice-chairman. Two candidates for secretary were then presented. The slate of officers for the coming year consists of:

Chairman—James P. Gilligan, School of Forestry, University of Minnesota, St. Paul.

Vice-chairman—F. C. Koziol, U. S. Forest Service, Salt Lake City, Utah.

Secretary—Frank W. Childs, National Park Service, Omaha, Neb.

F. C. KOZIOL
Secretary

Report of the Division of Forest-Wildlife Management

The meeting of this Division was held on the afternoon of October 17 at the Peabody Hotel. Fortunately a large room had been selected for the session as the attendance was at an all time high of 220. The active growth of the Division and the breadth of subject matter presented further indicates that the field covered is increasing in importance.

In the absence of Ralph T. King, chairman and Avon Denham, vice-chairman, Howard A. Miller, program chairman, presided. Because of the great importance of the southern timberlands in the industry of the South, the five papers presented dealt with various methods of fitting wildlife programs and developments into southern forestry practice. After presentation of the papers vigorous discussions brought out local problems and solutions. The papers and speakers were as follows:

1. "Coordinated Forestry, Farm and Wildlife Programs for Family Sized Farms of the Coastal Plain of the Deep Southeast," by Herbert Stoddard, Sr., Sherwood Plantation, Thomasville, Georgia. Mr. Stoddard was introduced by Frank Heyward who later commented on the original work done by the speaker in the fields of quail and pine management and on the positive use of fire. He brought out that the controversial early work of Mr. Stoddard had been fully recognized and that it had brought benefits to both timber production and quail.

2. "Game as a Product of Intensively Managed Forests," by Hubert D. Burke and Robert M. Blair, Southern Forest Experiment Station, New Orleans, Louisiana. Mr. R. W. Sentell, Southern Advance Bag and Paper Division of Robert Gair Company made pertinent and valuable comments.

3. "Importance of Southern Bottomland Hardwoods in Wildlife Management," by Bryant A. Bateman, School of Forestry, Louisiana State University, Baton Rouge, Louisiana. Comments were presented by Harry Clark of Fisher Lumber Company, Wisner, Louisiana.

4. "Effect of Siltation on Trout Streams," by Lee B. Tebo, Sr., Wildlife Resources Commission, Raleigh, North Carolina. Comments by Thomas C. Nelson, Athens—Macon Research Center, Athens, Georgia were of great interest and were prepared for publication.

5. "Deer and Turkey in Missouri's Managed Forests," by Robert L. Dunkeson, Missouri Conservation Commission, Columbia, Missouri. Mr. Leon Hornkohl, U. S. Forest Service, Rolla, Missouri commented on the paper and the changes taking place in the Ozarks that are affecting these important forest animals.

Officers elected are as follows:

Chairman—William L. Webb, State University of New York, College of Forestry, Syracuse, N. Y.

Vice-chairman—Elbert H. Reid, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Secretary—Odell Julander, Intermountain Forest and Range Experiment Station, Ogden, Utah.

The meeting was adjourned at 4:45 p.m.

WARREN W. CHASE
Acting secretary

Report of the Division of Private Forestry

The Division of Private Forestry convened in the Peabody Hotel, Memphis, Tenn., on the evening of October 15, 1956, under the chairmanship of Arthur C. Nelson of The Flintkote Company, Meridian, Miss. Approximately 475 persons were in attendance.

Harry Nadler, K-T Forestry Company, in his paper, "Let's Cut One for Ourselves! The Outline of a New Idea: a Forestry Company of, by, and for Foresters," presented a rather unique idea that should appeal to foresters. Nadler related the corporate action of 55 stockholders, all foresters, in developing a present ownership of 1,300 acres.

A paper on "The Development of Hardwood Forests on Private Lands in the South," by John W. Squires, Mississippi Products, Inc., very thoroughly covered the hardwood situation on 30,000,000 acres of the coastal alluvial plain. After pointing out the complexity of hardwood forestry, Squires emphasized the general theme that the South has hardwood for every use.

John F. Shanklin, Committee on Natural Areas, in his paper, "Natural Areas and Private Forestry," presented a plea on behalf of the SAF for the increased establishment of these areas.

A paper on "The Selection and Training of Foresters for Executive and Managerial Positions," prepared by Glenn Ball, Flintkote Company, was read by Chairman Nelson. In his very comprehensive paper, Ball pointed out the varied breakdowns that identify the problem of supervision and how the problem fits the individual. In commenting on the paper, George A. Garratt, Yale School of Forestry, told of the efforts in forest schools to produce foresters to meet the supervisory demands of industry.

In reporting for the Nominating Committee, Chairman Paul M. Dunn, St. Regis Paper Company, presented the following slate of officers who were unanimously elected:

Chairman—W. C. MacAdams, Francestown, N. H.

Vice-chairman—George V. Hjort, Boise Payette Lumber Co., Boise, Idaho.

Secretary—George W. Abel, St. Regis Paper Co., Jacksonville, Fla.

There was no further new or old business.

S. V. SIHVONEN
Secretary

Report of the Division of Public Relations

Richard Preston, dean, School of Forestry, North Carolina State College, led a panel of four in a discussion of "The Small Forest Landowner—Keystone and Enigma in Forestry. How to Reach Him Through Education." Panel members were Herman Baggenstoss, small woodland owner and editor of Grundy County (Tenn.) *Herald;* C. H. Coulter, Florida State Forester; J. W. Craig, Forestry Suppliers, Jackson, Miss.; Henry Malsberger, Southern Pulpwood Conservation Association, Atlanta, Ga.

Among the points brought out in the discussion were:

1. There is a need for more consulting foresters who can serve as a marketing center for the small owner and at the same time, through advice and assistance, bring about better practices on his lands. An example of such a consulting forestry business is that where pulpwood purchasing is combined with-on-the ground forestry assistance to the owner. Some enterprising young foresters are already in this field.

2. Foresters "talk to themselves" too much. Let's get away from high sounding names and terms, and start using language the non-technical owner can understand.

3. Publicity to the effect that we are growing more timber than we cut is a detriment to forestry on small ownerships. Such publicity, without qualification, makes the landowner question whether or not he will have a future market. He is inclined to want to get the most out of his woods while he can sell almost anything at a good price. Hence he may lose what interest in forestry practices he has developed.

4. Foresters should not permit their thinking to arrive at a point where it is the opinion among professional foresters that only foresters can make sound decisions in the treatment of forests. Forest owners, especially farmers, are capable of determining sound programs in the management of their properties, the same as is done in the management of dairy herds, orchards, and row crops. Forest management on private lands can expand to meet present and future requirements when thousands of landowners assume personal responsibility in the management of their properties. The foresters have the task of stimulating landowners to help themselves in applying sound management practices on their forest lands.

CHARLES W. MATTISON
Chairman

Report of the Division of Range Management

The 1956 meeting, Division of Range Management, Society of American Foresters, convened at 8:00 p.m.,

October 15, 1956, in the Peabody Hotel at Memphis, Tenn., with Bert H. Tucker, presiding. Attendance was 55.

The program featured a panel discussion of "The Place and Functions of the Division of Range Management in the SAF." Lincoln Ellison, panel moderator, was not present, so his statement was read by Chairman Tucker. This included an historical review of events leading to recognition of the Range Management Division.

The first panel speaker, DeWitt Nelson, SAF president, made a strong statement favoring the retention and strengthening of the Division. He stressed the need for coordinated multiple use thinking and management, centered in the SAF, with range management actively represented. He cited specific authority in SAF Bylaw 82, Section 6-c which reads in part, ". . . forestry work shall include all activities having to do with the management of forest land and the utilization of any of its resources."

The second panel speaker, Dr. Robert S. Campbell, Southern Forest Experiment Station, made seven specific points indicating the urgent need to maintain a strong, active group of range technicians in the SAF. These points again emphasized our responsibility for effective and realistic philosophy and action directed toward multiple use management.

The third panel speaker, Milo H. Deming, U. S. Bureau of Land Management, presented statistics showing a decline in attendance and interest of SAF members in the Range Management Division, especially since the founding of the American Society of Range Management. He proposed consolidation of this Division with some other Division such as Forest-Wildlife or Watershed Management.

The panel subject was opened for general discussion. Clint Wasser recommended that greater emphasis be given to increase active membership in the Division and to full-day diversified programs at annual meetings. More recruitment from the Forester (Range) option might provide SAF members for the Division. John Cassady suggested that all SAF members having a major interest in range management should be given an opportunity through the JOURNAL to decide whether or not they want to continue with the separate subject matter Division or join forces with some other Division.

The general tone of these discussions, as expressed by President Nelson and others, was that there is a very real place and function for this Division in the SAF, but that we need to adopt a more optimistic and aggressive attitude, spike up our programs, and solicit greater participation from the many foresters who still have range management as their major interest.

John T. Cassady, Southern Forest Experiment Station, discussed supplemental feeding and management of beef cattle on Louisiana long-leaf pine forest-bluestem grass ranges. Lowell K. Halls, Southeastern Forest Experiment Station, discussed results of supplemental feeding—pasture studies in the longleaf and slash pine-wiregrass ranges of South Georgia. Beef production per cow was greatly increased in both instances by well balanced nutrition and herd management.

Hurlon C. Ray, Soil Conservation Service, Arkansas, gave a well illustrated talk on "New Developments in Chemical Brush Control" with emphasis on aerial spraying of growth hormones to improve native pastures and pine timber stands in Oklahoma and northwest Arkansas. Best results in brush and scrub oak control were obtained where the pine site index was less than 60.

Results of the mail-ballot election of officers for 1957 were announced:

Chairman—Elbert H. Reid, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Vice-chairman—Grant A. Harris, Washington State College, Pullman, Wash.

Secretary—Joe A. Wagner, Bureau of Indian Affairs, Washington, D. C.

The group voted unanimously in favor of a motion by R. S. Campbell, calling for special consideration by the new officers of pertinent comments by panel speakers and the group on the future of the Range Management Division.

A motion by Milo Deming was passed urging or directing the new officers to appoint a small committee to investigate the possibilities of joining forces with another subject matter Division.

JOHN T. CASSADY
Secretary

Report of the Division of Silviculture

The 1956 meeting of the Division of Silviculture was held on the morning and afternoon of October 16, 1956, in the Ball Room of the Peabody Hotel, Memphis, Tenn. Well over 600 members were in attendance.

Chairman C. E. Ostrom turned the morning session over to John W. Squires as moderator of a "Symposium on the Silviculture of Southern Hardwoods." A panel of six speakers presented well-received papers on this subject. The afternoon session was devoted to volunteer papers covering a variety of subjects of silvicultural interest.

A brief business meeting was held late in the afternoon. In accordance with the procedure authorized at the 1955 meeting, officers were elected by ballot of those in attendance. Division

MEMBERS in attendance at the general session of the 56th annual meeting of the SAF in Memphis, Tenn., October 15, 1956.

officers for the year 1957 are:

Chairman—Henry I. Baldwin, New Hampshire Forestry and Recreation Commission, Hilsboro (automatically succeeded from vice-chairman).

Vice-chairman — James D. Curtis, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Secretary—Earl H. Tryon, West Virginia University, Morgantown.

The Committee on Forest Practices submitted its final report in the form of a 39-page publication by the Society of American Foresters titled "Forest Practices Developments in the United States—1940 to 1955." Copies priced at one dollar were on sale at the meeting; additional copies may be obtained through the Society office. The Committee was discharged in accordance with its request, although Committee Chairman K. P. Davis agreed to act as a repository for future material bearing upon forest practices. Inasmuch as the report culminates ten years of activity, the Division membership gratefully acknowledges the contributions of the Committee composed of:

George B. Amidon — R. K. LeBarron
W. S. Bromley — Herbert H. Muntz
Oliver D. Diller — K. B. Pomeroy
C. E. Farnsworth — Clarence W. Richen
Kenneth P. Davis, *Chairman*

The Committee on Stocking also presented its final report in the form of a manuscript titled "Stocking, Normality, and Measurement of Stand Density," submitted for publication in the JOURNAL OF FORESTRY. Committee members are Chairman C. Allen Bickford, F. S. Baker, and Fred G. Wilson. It was requested that the executive secretary arrange for reprints of the article for sale to the membership. This Committee was also discharged in accordance with its recommendation.

The report of the Committee on Natural Areas as presented by John F. Shanklin, chairman, listed three specific actions taken during the year. First, the Conservation Department of the State of New York has submitted five specific areas in the Adirondacks and the Catskills for the consideration of the Committee. Second, the National Park Service has agreed to designate such areas in the park system that may be recommended as natural areas by the Committee. Third, a system of liaison officers has been organized, one from each Society Section, to represent the Committee. Further, the Council of the Society has sanctioned the Committee's request to endeavor to obtain an outside grant of funds to permit a two-year field investigation to locate forest land containing those types presently missing from the approved natural area list.

Dr. Scott Pauley, chairman of the Committee on Forest Tree Improvement, announced that the Committee and others interested would meet following the Society Dinner on Wednesday evening, October 17.

There being no new business, the meeting was adjourned.

L. E. CHAIKEN
Secretary

Report of the Division of Watershed Management

The sixth meeting of the Division of Watershed Management was called to order at 9:00 a.m., October 16, 1956, in the Peabody Hotel, Memphis, Tenn., by Chairman Robert E. Dils. There were 280 members and guests in attendance. The theme of the Divisional meeting, in keeping with that of the general meeting, was "Forestry Looks Forward."

George R. Phillips, Soil Conservation Service, Washington, D. C., presented an interesting and informative paper entitled "Woodlands' Part and Foresters' Opportunities in Small Watershed Improvement." This included a review of application, work plan, and operation of the Watershed Protection and Flood Prevention Act.

"Evapotranspiration and Water Yields Following Forest Cutting and Natural Regrowth" was discussed by Jacob L. Kovner of the Rocky Mountain Forest and Range Experiment Station. Kovner illustrated how changes in cover can alter water supplies.

Homer A. Smith, Tennessee Valley Authority, was the third speaker; his subject "The Chestuee Watershed Project in Lower East Tennessee." In his talk, Smith described how public agencies and the people of Chestuee Watershed are concentrating and integrating their activities in an attempt to find out what it takes to get people to accept more responsibility in solving their problems.

"Watershed Management on National Forests in the South" was the title of a discussion by Otto Lindh, U. S. Forest Service. He traced the development of watershed management in this area, told where it stands today, and pointed up the need for more research in solving the watershed problems in forestry.

V. L. Harper, of the U .S. Forest Service, followed Lindh and covered the subject "What's Ahead for Watershed Management Research." In his talk, Harper discussed how the watershed researcher will be confronted with difficult problems urgently pressed on him for solution, the trend toward more basic research, the effectiveness of the team approach, the growing appreciation of research findings and increasing support for his work.

H. G. Wilm, State University of New York College of Forestry, chairman of the Committee for Study of Hydrologic Training of Men in the Profession of Forestry, presented an excellent report, "The Training of Men in Forest Hydrology and Watershed Management."

The second item of business was the announcement by Chairman Dils of new officers for the next year:

Chairman—E. G. Dunford, Pacific Northwest and Range Experiment Station, Portland, Ore.

Vice-chairman—P. W. Fletcher, School of Forestry, University of Missouri, Columbia, Mo.

Secretary—Sidney Weitzman, Lake States Forest Experiment Station, St. Paul, Minn.

Peter W. Fletcher was named chairman of a committee to set up by-laws for the Division to report at the annual meeting in 1957. Other members appointed were R. Boggess, G. Craddock, and B. Frank.

Chairman Dils announced the next meeting of the Division would be held in Syracuse, N. Y., November 10-13, 1957.

EDWARD A. JOHNSON
Secretary-Treasurer.

Forest Policy Recommended For Indiana

The Indiana Sub-section, Central States Section of the S.A.F., has adopted a statement of forest policy for its state and has distributed copies of the policy to those in the state interested in forestry and conservation.

The committee working on the statement included L. E. Sawyer, chairman, A. M. Herrick, and R. H. Grabow.

Specific categories dealt with in the recommended program are protection, education, forest management, research, public forests, and personnel standards.

Copies of the policy may be obtained from Charles I. Miller, secretary-treasurer, Indiana Sub-Section, SAF, Dept. of Forestry and Conservation, Purdue University, Lafayette, Ind.

Intermountain Section Holds Annual Field Meeting

The annual field meeting of the Intermountain Section was held October 11 and 12 at McCall, Idaho. Chairman George Hjort called the meeting to order and then asked for committee reports. The following motions were voted on and passed: That the Chapter or sub-section Chairmen be permanent members of the Section's Executive Committee. That an Objectives Committee be appointed. That a Policy Committee be appointed. The business meeting was adjourned at 5 p.m.

About seventy foresters and their wives attended the Section banquet held at Shore Lodge. Vern Gurnsey served as toastmaster. Anthony Squillace, of the Intermountain Forest and Range Experiment Station, who was the speaker at the banquet, talked about the progress in development of rust resistant white pine. In addition to explaining the work being done in the Idaho white pine Mr. Squillace made a number of suggestions for the benefit of the newly inaugurated ponderosa pine genetics program in southwest Idaho.

On the 12th, the foresters went on a conducted tour of Forest Service plantings in Bear Basin and pruning and thinning plots on Boise Payette Company lands. At the Brown Tie and Lumber Company timber sale on Zena Creek, they saw the LeTourneau Mobile Electric Spar Tree used on very steep granitic slopes. The ladies were conducted on a tour of the scenic Lick Creek and Secesh country. They enjoyed lunch at the modern logging camp of the Brown Tie and Lumber Co. Mr. Finley McNaughton of McCall was program chairman.

The Society's New Directory of Consulting Foresters

With this issue, the JOURNAL OF FORESTRY again publishes its annual list of consulting foresters (page 87).

Those consultants who are members of the Association of Consulting Foresters are designated by an asterisk.

The purpose of this designation is not to imply that these consultants are more competent than nonmembers of the Association. Rather, the designation is in accordance with the Society's policy of helping to develop and expand consulting forestry as a desirable professional specialization, and to assist consulting foresters in obtaining public acceptance as practitioners of a recognized profession.

The Association adheres to the code of ethics of the forestry profession as adopted by the Society of American Foresters in 1948. Information about the Association may be obtained from Seymour I. Somberg, executive secretary, 415 Olympia Building, Miami 32, Fla.

Grover M. Conzet (1887-1956)

Grover M. Conzet, 69, died in October at his home in Decatur, Ga.

Mr. Conzet, a native of Minnesota, began his forestry career in that state. He served for 14 years as Minnesota commissioner of forestry and was chairman of the Department of Conservation there before joining the U. S. Forest Service. He retired from active forestry work in 1952.

He received a B.S. degree in forestry in 1912 and the following year was awarded an M.S. degree, both from the University of Minnesota.

Coming Events

Southeastern Section

The Southeastern Section will have its first meeting of the coming year January 24-25 in Athens, Ga.

Upper-Mississippi Valley Section

The winter meeting of the Upper-Mississippi Valley Section is scheduled for February 1 and 2 in Memorial Union, Iowa State College, Ames, Iowa.

Appalachian Section

The Appalachian Section will hold its winter meeting January 18-19 at the Jefferson Hotel, Richmond, Va.

Ozark Section

The winter meeting of the Ozark Section will be held January 18-19 in the Western Hills Lodge, Lake Fort Gibson, Tahlequah, Okla.

Gulf States Section

The Gulf States Section will hold its 1957 meeting at the Jung Hotel, New Orleans, La., on May 9 and 10.

SECTION BOX SCORE
1957 MEMBERSHIP

	Applications received[1] Jan. 1957	Total 1956	Total 1957
Allegheny	19	58	19
Appalachian	4	58	4
Central Rocky Mtn.	6	32	6
Central States	2	42	2
Columbia River	6	77	6
Gulf States	1	79	1
Inland Empire	1	32	1
Intermountain	0	35	0
Kentucky-Tennesee	0	12	0
New England	12	61	12
New York	3	45	3
Northern California	6	67	6
Northern Rocky Mtn.	27	31	27
Ozark	36	19	36
Puget Sound	8	44	8
Southeastern	57	92	57
Southern California	1	2	1
Southwestern	0	2	0
Upper-Mississippi Val.	6	72	6
Washington	1	1	1
Wisconsin-Michigan	9	102	9
Totals	205	963	205

[1]Students, Junior, Affiliate, Associate (Initial) grades only.

SCHOOL BOX SCORE
1957 MEMBERSHIP

School	Student applications received Jan. 1957	Total 1956	Total 1957
Alabama Poly. Inst.	19	6	19
Univ. of California	6	53	6
Colorado A & M Col.	4	28	4
Duke University	2	7	2
University of Florida	3	25	3
University of Georgia	32	30	32
University of Idaho	1	21	1
Iowa State College	3	31	3
Louisiana Poly. Inst.	0	27	0
Louisiana State Univ.	0	22	0
University of Maine	7	13	7
University of Mass.	0	20	0
Michigan State Univ.	5	50	5
Univ. of Michigan	3	24	3
Univ. of Minnesota	3	26	3
Univ. of Missouri	35	2	35
Montana State Univ.	27	17	27
State Univ. of N. Y.	2	38	2
N. C. State College	1	24	1
Oregon State College	3	44	3
Pa. State University	6	35	6
Purdue University	1	36	1
Utah State Agric. Col.	0	28	0
Univ. of Washington	7	21	7
West Virginia Univ.	13	5	13
Yale University	4	13	4
Totals	187	646	187

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Southeastern Section Announces 1957 Officers

Newly elected officers of the Southeastern Section for 1957 have been announced.

F. Herbert Roberston, Jr., of Panama City, Fla., will serve as chairman. Also elected were Henry A. Wilson of Grayson, Ala., chairman-elect, and James F. Goggans of Auburn, Ala., secretary-treasurer.

Membership Applications and Advancements

Proposals for admission, advancement, and reinstatement received in the Society office during the month of November are listed below.

Action on the eligibility of those proposed for membership as listed below will be taken by the Council as of February 1, 1957. Communications from voting members regarding the membership eligibility of these persons should be received in the Society office prior to that date.

Allegheny Section

Student Grade

PENNSYLVANIA STATE UNIVERSITY

King, H. W.
Marchetti, M. A.
Schell, K. F.
Stutzman, R. B.
Terry, R.
Weimer, G. T.

WEST VIRGINIA UNIVERSITY

Denham, D. E.
Dill, R. E.
Fitzgerald, D. W.
Gall, D. G.
Harman, H. G.
Haywood, L. P.
Leichter, W. B.
Lemaster, J. T.
Moser, J. W.
Rinehart, J. M.
Summerfield, C. E.
Swank, W. T.

Hershberger, G. H.

Junior Grade

Kuhn, F. J., 703 Partridge Lane, Glen Burnie, Md. Reinstatement.

Ogden, E. P., Forester, W. Va. Pulp & Paper Co., Luke, Md. Reinstatement.

Pyles, H. K., Regional Forester, U.S.F.S., Upper Darby, Pa. (Affiliate 1951).

Appalachian Section

Student Grade

DUKE UNIVERSITY

Ketcham, D. E.
Phipps, H. M.

NORTH CAROLINA STATE COLLEGE

Thorne, F. L.

Junior Grade

Cromartie, P. M., Forester, West Lbr. & Box Co., Fayetteville, N. C.; N. C. State, B.S.F., 1941.

Ward, M. F., Forest Technician, International Paper Co., Wadesboro, N. C. Reinstatement.

Central Rocky Mountain Section

Student Grade

COLORADO A & M COLLEGE

Easley, F. N.
Hughes, J. M.
Knox, A. R.
Lynch, D. L.

Junior Grade

Bell, J. H., Tbr. Mgmt. Asst., U.S.F.S., Nemo, S. D.; Univ. of Minn., B.S.F., 1955.

Hagedorn, C. L., Dist. Forest Ranger, U.S.F.S., Camp Crook, S. D.; Univ. of Idaho, B.S.F., 1937.

Nobles, R. W., Appraiser, Bureau of Land Mgmt., Denver, Colo. Reinstatement.

Member Grade

McConnell, J. M., Asst. Dist. Ranger, U.S.F.S., Meeker, Colo.; State Univ. of N. Y., B.S.F., 1951. (Junior 1951).

Central States Section

Student Grade

PURDUE UNIVERSITY

King, C. D.

Member Grade

Anderson, M. G., Dist. Forester, State of Ill., Benton, Ill.; Purdue, B.S.F., 1950. (Junior 1951).

Affiliate Grade

Koller, M. P., Forester, Ohio Power Co., McConnelsville, Ohio.

Columbia River Section

Student Grade

OREGON STATE COLLEGE

Cavallin, J. E.
Shaeffer, T. A.
Scroggins, D. L.

Junior Grade

Banks, D. R., Forester, Crown Zellerbach

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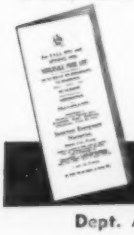

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Corp., Seaside, Ore.; Univ. of Calif., B.S.F., 1956.

Johnson, W. K., Asst. Forester, Allen Lbr. Co., Medford, Ore.; Ore. State, B.S.F., 1948.

Peck, C. K., County Ext. Agent, State College of Wash., Kelso, Wash. Reinstatement.

Member Grade

Barendregt, P. A., Forest Engr., Tygh Valley Lbr. Co., Tygh Valley, Ore.; Univ. of Wash., B.S.F., 1953. (Junior 1953).

Burke, R. E., Forester, U.S.F.S., Estacada, Ore.; Univ. of Minn., B.S.F., 1952. (Junior 1952).

Gould, N. E., Asst. Ranger, U.S.F.S., McKenzie Bridge, Ore.; Ore. State, B.S.F., 1951. (Junior 1951).

Trafton, G. B., Forester, Crown Zellerbach Corp., Cathlamet, Wash.; Univ. of Wash., B.S.F., 1950. (Junior 1953).

Affiliate Grade

Strach, J., Forester, Bureau of Land Mgmt., Salem, Ore.; Univ. of Poznan, Poland, M.S., (Mgmt. & Silviculture) 1935.

Gulf States Section

Junior Grade

Robinson, D. W., Asst. Dist. Forester, The Champion Paper & Fibre Co., Kirbyville, Texas; Okla. A & M, B.S., (Forestry), 1952; N. C. State, M.F., 1956. (Affiliate 1954).

Member Grade

Smith, A. A., Consulting Forester, Crockett, Texas; Colo. A & M, B.S.F., 1940. (Junior 1955).

Affiliate Grade

Walsh, J. B., Dist. Supt., International Paper Co., Bastrop, La.

Inland Empire Section

Student Grade

UNIVERSITY OF IDAHO

Christiansen, N. B.

New England Section

Student Grade

UNIVERSITY OF MAINE

Brink, D. T.	Smith, M. L.
Crockett, R. V.	Tonnesen, J. E.
Kutz, C. F.	Welch, J. A.

Lane, J. M.

YALE UNIVERSITY

Barker, G. R.	Cobleigh, H. N.
Blumenstock, M. W.	Lawson, D. L.

Member Grade

Bond, R. S., Instructor, Univ. of Mass., Amherst, Mass.; Univ. of Mass., B.S.F., 1951; Yale, M.F., 1952 (Junior 1951).

Gould, W. P., Asst. Prof., Univ. of Rhode Island, Kingston, R. I.; Univ. of Mass., B.S.F., 1950; Yale, M.F., 1951. (Junior 1951).

Affiliate Grade

Brown, J. H., Research Asst., Univ. of Rhode Island, Kingston, R. I.; Univ. of Conn., B.S., (Forestry), 1956.

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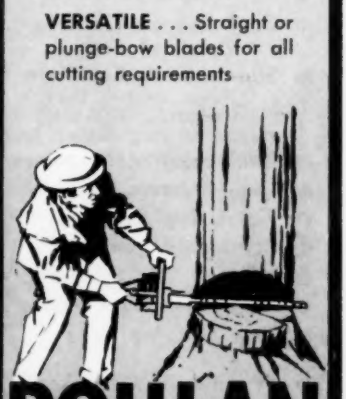

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New York Section

Student Grade

STATE UNIVERSITY OF NEW YORK

Haug, J. R. Nyland, R. D.

Member Grade

Bayless, B. J., Forester, N. Y. State Cons. Dept., Warsaw, N. Y.; State Univ. of N. Y., B.S.F., 1950. (Junior 1951).

Affiliate Grade

Smith, W. J., Mgmt. Trainee, Blue Grass Cooperage Co., Amsterdam, N. Y.; State Univ. of N. Y., B.S., (Retail Mgmt. & Light Construction), 1952.

Northern California Section

Student Grade

UNIVERSITY OF CALIFORNIA

Krebill, R. G. Oswald, D. D.
Lopez, C. E. Rodick, L. S.
Olson, D. L. Smith, C. O.

Northern Rocky Mountain Section

Student Grade

MONTANA STATE UNIVERSITY

Anderson, R. A. Johnston, D. T.
Barney, R. J. Krammes, J. S.
Bendnorz, J. C. Laux, J. W.
Bloedel, E. E. Lee, O. M.
Carruthers, R. V. Mutch, R. W.
Dale, R. T. Nelson, D. W.
Dyson, P. J. Pennington, A. M.
Embry, R. S. Rabone, H. M.
Foster, J. R. Rundle, R. J.
Galea, J. Stevens, M. E.
Gibson, R. L. Sundstrom, C.
Hoffman, H. W. Wakefield, S.
Hollowell, A. J. Wambach, R. F.
Jernigan, F. P.

Ozark Section

Student Grade

UNIVERSITY OF MISSOURI

Allen, J. G. LaVal, R. M.
Allman, A. D. Lohmeyer, E. J.
Berkholz. R. C. Luebehow, K. R.
Booth, J. O. Martin, J. W.
Bunch, S. R. Maynard, A. S.
Capps, J. S. Minor, R. M.
Cochran, R. B. Onstott, B. G.
Collett, L. M. Presley, J. J.
Cottingham, R. I. Ray, J. R.
Crisan, J. R. Rivas, A. M.
Gansner, D. A. Seabaugh, J. T.
Gritman, J. C. Settergren, C. D.
Heflin, E. L. Smith, T. M.
Hilgemann, W. O. Soehlig, L. A.
Hurlbut, D. B. Solomon, C. E.
Jordan, T. E. Ward, J. R.
Jourden, R. L. Zeugin, R. F.

Krull, E.

Junior Grade

Hornkohl, L. W., Forester, U.S.F.S., Rolla, Mo. Reinstatement.

Stainton, W. G., Asst. Dist. Forester, International Paper Co., Malvern, Ark.; Univ. of Fla., B.S.F., 1949.

Member Grade

Maple, W. R., Research Forester, South-

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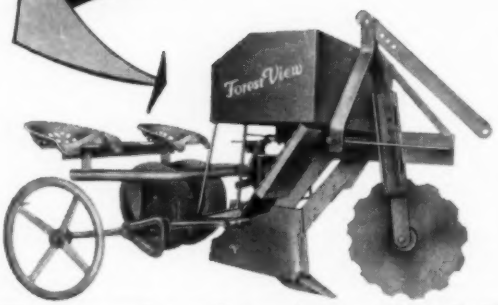

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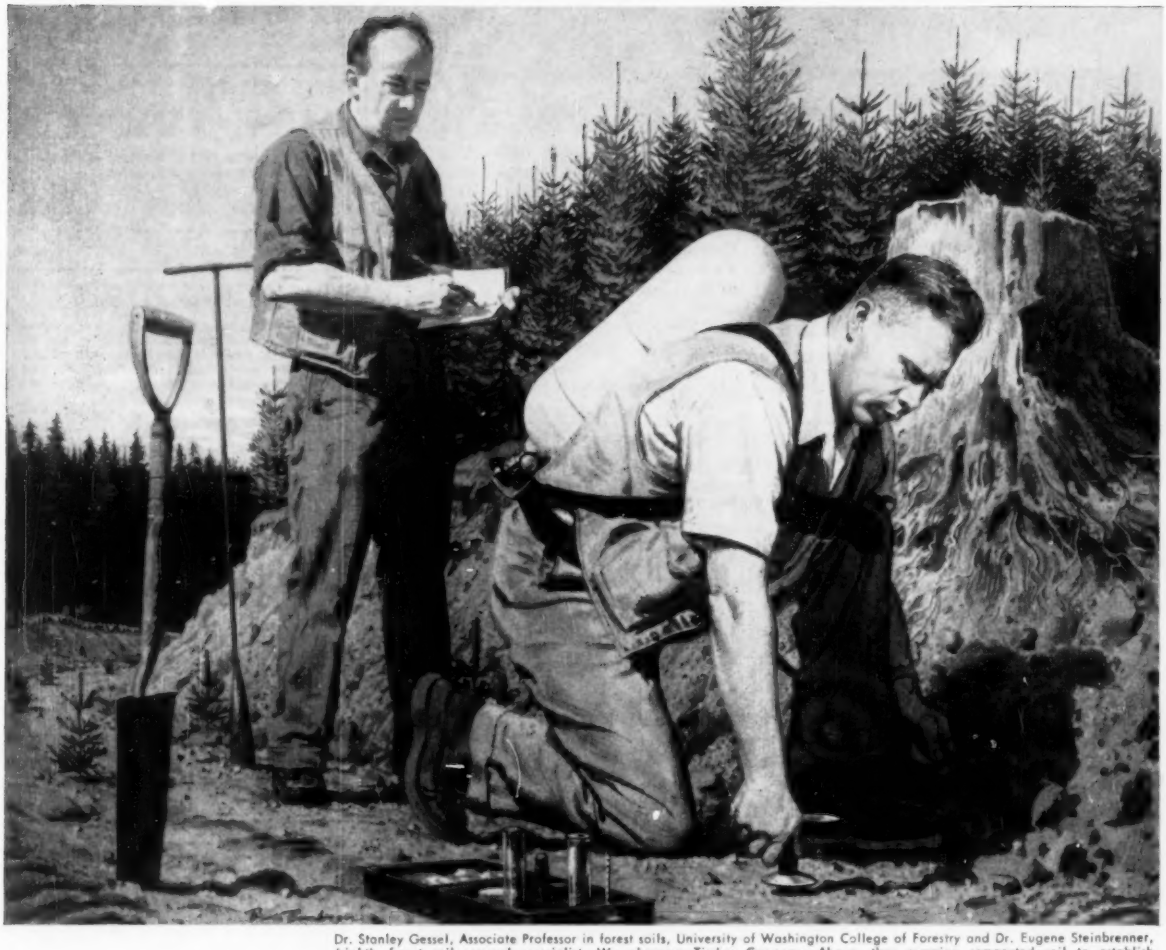

Dr. Stanley Gessel, Associate Professor in forest soils, University of Washington College of Forestry and Dr. Eugene Steinbrenner, (right), forest soil research specialist, Weyerhaeuser Timber Company. Above, they examine compacted soil to establish its ability to grow new tree crops. Both are engaged in soils research programs intended to improve timberland productivity.

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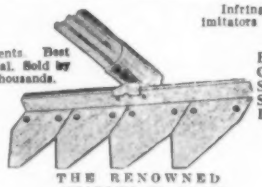

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ern Forest Expt. Sta., Harrison, Ark.; Duke, M.F., 1951. (Junior 1951).

McElroy, J. W., Dist. Forest Ranger, U.S.F.S., Danville, Ark.; Iowa State, B.S.F., 1949. (Junior 1953).

Palo, F. B., Forester, Bureau of Land Mgmt., Russellville, Ark.; Univ. of Mo., B.S.F., 1952. (Junior 1952).

Swilley, J. W., Asst. Dist. Forester, Crossett Lbr. Co., Hamburg, Ark.; Univ. of Ga., B.S.F., 1952; Yale, M.F., 1953. (Junior 1952).

Timko, P. A., Dist. Forest Ranger, U.S.F.S., Hector, Ark.; Iowa State, B.S.F., 1949. (Junior 1953).

Puget Sound Section

Student Grade

UNIVERSITY OF WASHINGTON

Kringle, P. R.
Lucci, F. J.
McCullough, T. O.
Pomeroy, W. L.
Welsh, J. L.
Woodman, J. N.

Northman, R. W.

Member Grade

Bohlin, E. W., Supv. Park Ranger, Natl. Park Service, Clearwater, Wash.; Univ. of Wash., B.S.F., 1949. (Junior 1953).

Diekhaus, R. V., Asst. Logging Engineer, Puget Sound Pulp & Tbr. Co., Bellingham, Wash.; Mich. State, B.S.F., 1950; M.S., 1951. (Junior 1951).

Dimock, E. J., Forester, U.S.F.S., Olympia, Wash.; Yale Univ., B.S.F., 1950; M.F., 1951. (Junior 1951).

Gockerell, E. C., Forest Mgmt. Forester, State of Wash., Port Angeles, Wash.; Univ. of Wash., B.S.F., 1951. (Junior 1951).

Grayum, G. H., Chief Forester, West Tacoma Newsprint Co., Steilacoom, Wash.; Univ. of Wash., B.S.F., 1951. (Junior 1951).

Heath, E. H., Asst. Resident Forester, Pysht Tree Farm, Port Angeles, Wash.; Univ. of Wash., B.S.F., 1951. (Junior 1951).

Ker, J. W., Associate Prof., Univ. of B. C., Vancouver, Canada; Yale, M.F., 1951. (Junior 1951).

Affiliate Grade

Edgington, C. E., Fire Control Aide, U.S.F.S., Quinault, Wash.

Southeastern Section

Student Grade

ALABAMA POLYTECHNIC INSTITUTE

Bailey, K. D.
Blackmarr, W. H.
Branch, E. G.
Carpenter, J. W.
Chambles, J. L.
Champion, R. H.
Earnest, O. B.
Frazer, W. R.
Goodman, J. H.
Hazen, W. E.
Hendrix, A. D.
Mason, R. A.
Neiswender, H. W.
Newby, P. W.
Nichols, N. G.
Pomeroy, J. E.
Ricketts, J. G.
Windham, W. E.

Helms, J. A.

UNIVERSITY OF FLORIDA

Gould, H. C.
Whitacre, L. D.

Haislett, B. M.

UNIVERSITY OF GEORGIA

Bethea, G. E.
Biddick, D. D.
Boyett, J.
Craford, S. W.
Edwards, O. C.
Eller, F.
Kantziper, A. L.
Knowles, P. C.
Lanier, J. R.
Lee, T. S.
Little, J. W.
Moyers, W. H.

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Freeman, H. D. Palmer, A. N.
Fulcher, B. R. Parker, W. H.
Gibson, S. G. Riley, H. P.
Harrison, D. L. Seymour, M. B.
Hefner, J. E. Sims, D. H.
Holt, J. A. Striplin, N. D.
James, J. C. Swindell, H. A.
Jones, G. R. Tillman, S. L.
Jones, R. W. Welch, W. E.

Junior Grade

Davis, L. S., Forester, U.S.F.S., Dry Branch, Ga.; Univ. of Mich., B.S.F., 1956.

Lain, N. G., Farm Forester, Fla. Forest Service, Lakeland, Fla.; Univ. of Fla., B.S.F., 1953.

Pierce, C. F., Forester, Allison Lbr. Co., Bellamy, Ala.; Univ. of Fla., B.S.F., 1953.

Member Grade

Holdren, R. K., Dist. Forester, Rome Kraft Co., Rome, Ga.; Pa. State, B.S.F., 1953; Duke, M.F., 1954. (Junior 1953).

Koier, W. L., Timber Estimator, Tenn. Coal & Iron Div. of U. S. Steel, Stapleton, Ala.; A.P.I., B.S.F., 1950. (Junior 1951).

Mace, M. C., Unit Forester, International Paper Co., Panama City, Fla.; Univ. of Fla., B.S.F., 1952. (Junior 1952).

Southern California Section

Junior Grade

Murray, R. B., Unit Ranger, U.S.F.S., Tumunga, Calif.; Mont. State, B.S.F., 1954.

Member Grade

Heilman, E. G., Asst. Dist. Ranger, U.S.F.S., Descanso, Calif.; Mont. State, B.S.F., 1950. (Junior 1951).

Ruppelt, J. M., Asst. Dist. Ranger, U.S.F.S., Idyllwild, Calif.; Iowa State, B.S.F., 1951. (Junior 1952).

Southwestern Section

Junior Grade

Hughes, D. C., U.S.F.S., Overgaard, Ariz., A.P.I., B.S.F., 1950. Reinstatement.

Member Grade

Palpant, E. H., Forester, Rocky Mtn. Forest & Range Expt. Sta., Albuquerque, N. Mex.; Mich. State, B.S.F., 1950. (Junior 1952).

Upper-Mississippi Valley Section

Student Grade

IOWA STATE COLLEGE

Dodge, R. E. Omodt, D. G.

Koning, J. W.

UNIVERSITY OF MINNESOTA

Harthan, D. L. Scott, D. H.

Reidel, C. H.

Member Grade

Beckwith, L. C., Entomologist, Lake States Forest Expt. Sta., St. Paul, Minn.; State Univ. of N. Y., B.S.F., 1951. (Junior 1953).

Holt, B. P., Forester, Bureau of Indian Affairs, Bemidji, Minn.; Colo. A & M, M.F., 1951. (Junior 1953).

Washington Section

Junior Grade

Barker, J. M., 1104 N. Pitt St., Alexandria, Va.; N. C. State, B.S.F., 1954.

Wisconsin-Michigan Section

Student Grade

MICHIGAN STATE UNIVERSITY

Bey, C. F. Switzer, H. D.
Hudspith, J. E. Willits, J. M.

Paulus, R. D.

UNIVERSITY OF MICHIGAN

Snyder, B. E. Van Sickle, C. C.

Tincoff, T. F.

Junior Grade

Elkington, R. J., Supv., Cosolidated Water Power & Paper Co., Rhinelander, Wis. Reinstatement.

Jipson, A. W., Work Unit Cons., Soil Cons. Service, Eau Claire, Wis.; Univ. of Minn., B.S.F., 1941.

Member Grade

Basel, C. O. E., Forester, Abitibi Corp., Alpena, Mich.; Mich. State, B.S.F., 1950; M.S., 1951. (Junior 1951).

Densmore, J., State Soil Cons., U. S. Soil Cons. Service, Madison, Wis.; Univ. of Minn., B.S.F., 1935; Yale, M.F., 1938. Reinstatement.

Honorary Member

Lin, D. Y., president, Chun Chi College, Hong Kong; St. John's Univ. (Shanghai), B.A., 1910; Univ. of Mass., B.Sc., 1912; Yale Univ., M.F., 1914; Peking Govt., L.L.D., 1920.

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Forestry News

Fire Control Research Conference Held in Washington, D. C.

A two-day conference on the correlation of fire research was held November 8 and 9 in Washington, D. C. It was sponsored by the Division of Engineering and Industrial Research of the National Research Council. The program was arranged by the Committee on Fire Research established at the request of the Federal Civil Defense Administration.

Approximately 180 invited participants attended the conference; including representatives from Canada and abroad. Forestry and forest products had 16 representatives.

Among the programmed speakers were Keith Arnold of the California Forest and Range Experiment Station, who discussed the present status of forest fire research, and Arthur A. Brown of the U. S. Forest Service, who presided at one of the sessions.

The purpose of the conference was to persuade scientists and those supporting research of the need for stepped up investigations in fire prevention and extinguishment.

States Receive $28 Million from National Forest Receipts

Checks totaling $28,035,256.40 were mailed in November to the 40 states and 2 territories containing national forest lands as their share of receipts from those forests, according to the U. S. Department of Agriculture. These checks represent 25 percent of the total money collected by the Forest Service from national forests between July 1, 1955 and June 30, 1956.

This amount is the largest ever sent to the states and is a 45 percent increase over the $19,381,154.57 sent a year ago. It reflects the record receipts from timber sales, grazing permits, and other land uses from national forests in fiscal year 1956.

According to the law the money sent to the states must be used for the benefit of public roads and schools within the counties in which the national forests are located.

Chermes Threat Analyzed by Northwest Action Group

Meeting in Portland October 29, some 80 foresters and forest entomologists of Oregon and Washington re-elected E. L. Kolbe chairman of the Northwest Forest Pest Action Committee, the all-inclusive group that guides Pacific Northwest protective action against timber pests. Norman E. Bjorklund was re-elected secretary and Royce O. Cornelius named to a newly created post of vice chairman. The group's name was ordered changed from "Committee" to "Council."

A full day's discussion brought out a generally favorable situation with regard to most forest insects, but a serious and growing infestation of *Chermes piceae* (balsam woolly aphid)

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in silver fir stands of the Mt. St. Helens country in southwestern Washington and in white fir stands elsewhere in western Washington and Oregon. Some 500,000 acres are infested, it was reported.

R. L. Furniss, forest experiment station entomologist, reported the insect was first discovered on grand fir in Oregon's Willamette Valley in 1930 but no large outbreak had occurred in the region until now. The insect is believed to be a relatively recent arrival on the U. S. scene.

The Council recommended stepped-up Chermes research, inventory of infested and killed timber, surveys, salvage, market promotion for the species and related steps to hasten control and halt losses.

Industrial & Private

G. B. Amidon Promotion Announced

Appointment of G. B. Amidon to director of woodlands was announced in November by Clarence Larson, vice president in charge of operations for the Minnesota and Ontario Paper Company.

Formerly director of forest management, Mr. Amidon moves to his new position with 20 years' experience in the forest management and wood procurement fields. Besides company wide forest management responsibilities, as director of woodlands, he will administer the company's timber purchasing programs plus wood production activities in Minnesota.

Amidon joined "Mando" in 1944 as a forest management officer, coming from the U. S. Forest Service Lake States Forest Experiment Station at St. Paul. He became director of forest management in 1952.

He is an alumni of the University of Minnesota's School of Forestry,

G. B. AMIDON

graduating in 1936 with a B.S. degree. He is a member of the Canadian Institute of Forestry, secretary and chairman of the Upper Mississippi Valley Section of the SAF and vice president of the American Pulpwood Association.

Amidon is also a member of the Minnesota Research Council and the University of Minnesota Institute of Agriculture Advisory Council.

Long-Bell Merges with International Paper

Completion of the merger of The Long-Bell Lumber Co. and Long-Bell Lumber Corp. into International Paper Co. was announced in November by J. D. Leland, Kansas City, Mo., formerly president of both Long-Bell companies and John H. Hinman, chairman of the board of International Paper Co., New York.

The Long-Bell organization has been a major United States producer and merchandiser of lumber and plywood for many years. Its properties—woodlands, sawmills and plywood plants, principally in the Pacific Northwest, and retail building material stores and jobbing houses in a number of states—are all included in the merger. The Long-Bell operations will be continued as the Long-Bell Division of International Paper Company.

C. R. Binger Named to New Position

Appointment of C. R. Binger to the position of assistant general manager of the Minnesota and Ontario Paper Co., National Pole and Treating Division has been announced.

Binger previously headed the forest management department of "Mando's" Canadian subsidiary, the Ontario-Minnesota Pulp and Paper Co., Ltd. He joined the company in 1946 and in 1948 became assistant to the director of forest management. In 1952, he became forest management officer for the Canadian operations, stationed at Fort Frances, Ont.

Binger holds a B.S. degree in forestry from the University of Minnesota's School of Forestry and a Master's from Yale University. During World War II he served with the U. S. Navy and is presently a lieutenant commander in the U. S. Naval Reserve. He is a member of the Canadian Institute of Forestry, and the Canadian Pulp and Paper Association.

Bruno E. Seppala has been named to succeed Binger as forest management officer for the company's Canadian operations.

Directors of NLMA Hold Annual Meeting, Elect W. M. Leuthold President

At their annual meeting November 7-10 in Washington, D. C., directors and committeemen of the National Lumber Manufacturers Association

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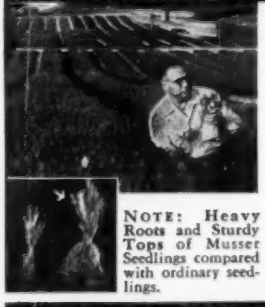

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elected Walter M. Leuthold, board chairman of Deer Park Pine Industries, Inc., Deer Park, Wash., president of the association.

Major emphasis of the 1957 meeting was on research and sales promotion-merchandising methods.

A highlight of the four-day session was the formal opening of a new wood particles pilot plant by the Timber Engineering Co., NLMA's research affiliate. The plant is the first of its kind in the U. S. and is the latest addition to the company's modern research laboratory in Washington, D. C.

The directors authorized a study to develop recommendations on the practicability of a national merchandising-advertising program. In addition they authorized a survey of the trends in lumber demands, particularly in home building.

The association's publication *Forest Products Research Guide*, a world-wide bibliography of technical information developed over several years, will be discontinued in favor of a *Research Inventory*, a year-to-year report on research being conducted in the U. S.

The NLMA will cooperate with the Forest Products Research Society in a program designed to encourage more high school students to train for technical positions in lumber and wood products industries. The group also approved new research pending availability of funds.

Kimberly-Clark Corporation Awards Forestry Fellowship

The Kimberly-Clark Corporation Foundation Fellowship has been awarded to Gordon J. Kimble of Minneapolis, Minn., a graduate student of the University of Minnesota School of Forestry.

Kimble will conduct research studies into the ecological relationships of young pulpwood trees and into the brush species which prevent their establishment and restrict their growth.

Field work for the project will be in northeastern Minnesota under the guidance of Henry L. Hansen, professor of silviculture for the School of Forestry.

Glatfelter Company Presents Scholarships

D. E. Hess, general manager of The Glatfelter Pulp Wood Co. of Spring Grove, Pa., has announced the winners of the company's Penn State Forestry School scholarships.

Winners of the $500 scholarships are Jeff F. Clarke and Robert E. Slagle.

The awards were based on the student's need, scholarship, activities, and interest in the forestry profession. They are awarded to an outstanding sophomore or junior student to be used during their junior and senior years of study in the courses of forestry.

This is the third consecutive year that the company has made these scholarships available.

Homelite Awards North Carolina Scholarships

Homelite Forestry Scholarships, valued at $250 each, have been awarded to John H. DeCoste and Theodore O. Hilbourn, Jr., students in the School of Forestry at North Carolina State College, Raleigh.

Presentation of the awards, given on the basis of outstanding academic achievements, was made at the annual Rolleo of the college's School of Forestry at Hill Forest, near Durham, October 20. The awards were presented by Dirk Slikker of Raleigh, local manager of the Homelite Corporation.

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As part of its woodlands program, and to help insure continued good forestry in the future, Union Bag-Camp each year awards three college scholarships in forestry and two graduate forestry fellowships. The scholarships are to the University of Georgia Forestry School and are open, on a competitive basis, to Georgia high school graduates. One of the fellowships is to Yale, the other to Duke; both are open to graduate foresters.

You can get all details on these college grants by writing Woodlands Division, Union Bag-Camp Paper Corp., P. O. Box 570, Savannah, Ga.

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Public

Buchanan New Assistant Chief of Forest Disease Research Office

Thomas S. Buchanan has been appointed assistant chief, Division of Forest Disease Research, Washington office of the U. S. Forest Service.

Dr. Buchanan replaces Marvin E. Fowler who has transferred to the Northeastern Forest Experiment Station at Upper Darby, Pa., as chief, Division of Forest Disease Research.

Since 1951 Buchanan has been director of research for the International Cooperation Administration's agricultural development program in Liberia where a modern agricultural experiment was developed and operated.

A native of Washington state, Dr. Buchanan has done research on white pine blister rust, decays of windthrown timber, and on the littleleaf disease of shortleaf pine. In 1947 he was appointed associate professor of forest pathology at the University of Idaho, School of Forestry.

Dr. Buchanan received his B.S. degree in forestry from the University of Idaho in 1935, a Master's degree in forestry from the University of California in 1937, and his Ph.D. from Yale University in 1943. He is a member of Xi Sigma Pi and served for one biennium as national secretary-fiscal agent.

DAN E. BULFER

Bulfer Heads Forest Service Recruitment

Dan E. Bulfer was assigned to the Washington office of the Forest Service in December to head up recruitment of personnel. He goes to his new position from that of supervisor of the Chippewa National Forest in northern Minnesota. He had previously been supervisor of the Nicolet and before that served as assistant personnel officer for the North Central Region following other assignments in the Midwest and the West. He is a 1930 forestry graduate of the University of Minnesota. During World War II he served three years with the Air Force, much of it in China.

Handy, Bottcher Move to Regional Office at Portland

Jack E. Handy and Richard P. Bottcher have joined the staff of the Forest Service Regional Office at Portland, Ore., according to an announcement by J. Herbert Stone, regional forester.

Handy will work in the Division of Operations planning a program for

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Assistance in forest management is provided by county foresters and a number of consulting foresters. Currently a 5-year program of practical management of 50 small private tracts is being sponsored by the Sears, Roebuck Foundation in cooperation with the Extension Service and many other public and private agencies. The Society for the Protection of New Hampshire Forests, founded in 1901 has been a leader in National as well as state forestry programs and originally sponsored the tree farm movement in New Hampshire. More recently the Society has been active in conservation education for teachers and young people.

The White Mountain National Forest and over 100 state forests and as many more city, town and county forests furnish varied opportunities for recreation as well as demonstrations of forest management.

Forest research is actively pursued by state and federal agencies, centering on experimental forests and notable advances in wood utilization are being made by wood-using industries.

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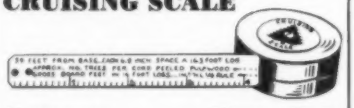
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additional housing facilities. Bottcher's duties will be with the Recreation Section, Division of Recreation and Lands.

Handy, a native of Colorado, served as staff officer of Wenatchee National Forests for the past six years. He is a 1937 graduate of Washington State College. His work with the Forest Service began in 1936.

Bottcher was transferred to Portland from Mt. Hood National Forest where he was superintendent. He began working with the Forest Service in 1927. In 1934 he graduated from Oregon State College with a B.S. degree in forestry.

Oregon Research Center Position Filled

William E. Hallin, U. S. Forest Service project leader in charge of forest management research in northeastern California, has been selected to head research activities in southwestern Oregon.

Effective early in 1957, he will become leader of the Siskiyou-Cascade Research Center at Roseburg, Ore., a branch of the Pacific Northwest Station. He succeeds G. Lloyd Hayes, recently placed in charge of forest management research at the Rocky Mountain Forest and Range Experiment Station.

Except for service in World War II as an air force photo intelligence officer, Hallin has been employed continuously by the California Forest and Range Experiment Station since 1932. He began working for the Forest Service in 1930, when he joined the staff of the Deschutes National Forest in central Oregon.

Hallin earned the B.S. degree from the University of Minnesota in 1929 and the Master's degree from Yale University in 1930. He is a member of Xi Sigma Pi.

Allied

Texas Forestry Association Elects New Officers

New officers of the Texas Forestry Association were elected at the organization's 42nd annual meeting October 19. They are: R. M. Townsend of Jasper, president; Clyde Thompson of Diboll, first vice president; Marvin Angle of Nacogdoches, second vice president. E. R. Wagoner of Lufkin is executive secretary.

The association adopted a resolution in favor of a statewide stock law "for

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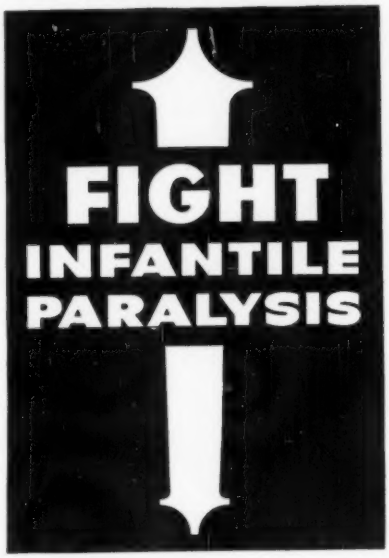

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B. A. Ryan Heads Louisiana Forestry Association

The election of B. A. Ryan, Springhill, La., as president of the Louisiana Forestry Association was recently announced following the association's ninth annual meeting. Ryan is division forester for International Paper Co.

W. E. Dietrich, W. E. Parks, and W. M. Palmer were named vice presidents, and Q. T. Hardtner treasurer.

Mississippi Association Elects Officers

Richard C. Allen, chief forester with A. DeWeese Lumber Company of Philadelphia, Miss., has been elected president of the Mississippi Forestry Association and began his duties in that capacity on November 1.

During the past year he served the association as vice president in charge of operations and had previously acted as chairman of the committee on tree farms.

Other officers elected for the coming year are Vice President James R. Clark, D. L. Fair, W. W. May, and Secretary-Treasurer R. T. Perry.

RICHARD C. ALLEN

R. L. Edwards Dies

Ralph Lanier Edwards, 52, prominent Morgantown, N. C. furniture industry executive, died on October 31.

Mr. Edwards had long been active

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in forestry affairs in North Carolina, was the first vice president of the N. C. Forestry Association and at the time of his death was serving as the first chairman of the association's Furniture, Plywood and Veneer Council.

Education

Penn State Foresters to Hold Golden Anniversary Celebration

The 50th anniversary of professional forestry instruction at The Pennsylvania State University will be observed May 27-28, 1957. The two-day celebration will be held at University Park.

The sponsoring organization is the Penn State-Mont Alto Forestry Alumni Association, representing the 1900 living forestry graduates of the University and of the old State Forestry School at Mont Alto which was merged with Penn State in 1929.

Among those expected to participate on the program are Governor George M. Leader, President Eric A. Walker of the University, former President Milton S. Eisenhower, and representatives of education and the forestry profession. In attendance will be officers of the U. S. Forest Service, state foresters, heads of forestry schools, and industrial foresters. More than 500 are expected.

E. O. Ehrhart, president of the Armstrong Forest Company, Johnsonburg, Pa., is general chairman for the golden anniversary meeting. A feature of the celebration will be a book, *Forestry Education in Pennsylvania*, published by the Forestry Alumni Association. It is being compiled by Henry Clepper, executive secretary.

Representing the School of Forestry will be Director Maurice K. Goddard, who is on leave of absence serving as secretary of the Pennsylvania Department of Forests and Waters, and William C. Bramble, acting director.

Ohio Agricultural Experiment Station to Celebrate 75th Anniversary

"Seventy-five Years of Progress in Agricultural Research" is the theme

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set by the Ohio Agricultural Experiment Station for its diamond jubilee year to be observed in 1957.

Founded in Columbus, Ohio, in 1882, the Station moved to Wooster, Ohio, in 1892 and is now recognized as one of the leading institutions of its kind in the nation. Land area including outlying farms, totals over 4,000 acres; the scientific staff numbers 200.

An event planned for late in the jubilee year is the dedication of Williams Hall, a new half-million dollar agronomy-forestry building now under construction on the main campus. Other special activities include a series of special symposia on related agricultural topics and a full schedule of field days for bringing Ohio farmers up-to-date on new research with livestock, crops and soils, forestry, and other farm enterprises.

The Ohio Station is the site of the Secrest Arboretum comprising 80 acres devoted to a scientific study of over 600 native and exotic species and varieties of woody plants. The arboretum was established in 1908 by the late Edmund Secrest who afterwards served a 10-year term as Station director after having devoted nearly 40 years to forestry research. Present chairman of the Station's forestry department is Oliver D. Diller who heads a staff of seven research specialists in silviculture, forest genetics, forest physiology, woodland management, and wood utilization.

Industrial Forestry Seminars Continue

Forestry executives from throughout the nation attended a 10-day Industrial Forestry Seminar at the Yale University School of Forestry from October 22 through November 2.

E. T. F. Wohlenberg, professor of industrial forestry at Yale, led the seminar, one of three scheduled for the winter months at Yale and the University of California. The seminars were launched by Yale last year. Following this year's initial seminar in New Haven, the second will take place at Berkeley, Calif., in January, to accommodate greater numbers of West Coast forestry executives. The third will be held at Yale in March.

Topics discussed included: Forest inventories and stand structure studies; business organizations in the forest products industries; income taxes in relation to operating costs; public relations in forestry; labor relations, collective bargaining and training of supervisors; research and development in

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INDEX TO ADVERTISERS

	Page
Allis-Chalmers	2
Atkinson, S. Gayley	85
Banzhaf & Co., George	84
Bartlett Mfg. Co.	74
Belanger & Bourget	84
Bozett, Wm. J.	85
Caterpillar Tractor	3rd Cover
Chain Saw Age	71
Clark, Thomas G.	85
Clifton, Thomas C.	85
Cranston, Keith	84
Eastman, Jr., Wm. A.	85
Fechheimer Bros. Co.	74
Forest Seeds of Calif.	72
Forestry Suppliers	77
Forestview Evergreen Nurseries	72
Hale Fire Pump	83
Hall, Albert G.	85
Hall, Jack M.	85
Hammon, Jensen & Wallen	84
Hazard, James O.	74
Homelite Corp.	4th Cover
Keene Forestry Association	74
Kurfew, Inc.	82
Lemieux, Frank J.	85
Lind Co., A. L.	82
Lowther Co., Harry A.	82
Meadows, Ben	75
Melin Meteorological Service	82
Midvale Chemical Co.	71
Musser Forests, Inc.	78
Nelson Co.	83
Northeast Forestry Service	85
Northern Tree Co.	85
Osmose Wood Pres. Co.	80
Panama Pump	72
Pomeroy & McGowin	84
Pond & Moyer Co., Inc.	85
Poulan Chain Saws	71
Prentiss & Carlisle, Inc.	85
Price, William H.	85
Rich Fire Tool	74
Rootspred	74
Ryker, Inc., Harrison C.	71
Sandvik Steel, Inc.	76
Sebrell Corp., J. B.	82
Sewall Co., James W.	85
Silva, Inc.	74
Smith Co., D. B.	2nd Cover
Southern Coatings	81
Southern Seed Co.	71
Stock, John W.	85
Suncrest Evergreen Nurseries	70
Timber Mgmt. Service	85
Tree Farm Mgmt. Service	85
Union Bag-Camp Paper Corp.	79
Walpole Co.	70
Western Fire Equipment	76
Weyerhaeuser Timber Co.	73
Winslow, Paul T.	84
Woodlot Seed Co.	74

the forest industries, and integration in the industries; and forest genetics in relation to forest management practices.

California Management School For Foresters Scheduled

How modern punch card techniques can be used in forest management will be featured at the Ninth Annual Forest Management Field School at the University of California, which will be held for men working in the forest industries of California. No tuition fees will be charged.

Forestry Dean Henry J. Vaux announced that the school will be held Jan. 28-Feb. 1, 1957 at Walter Mulford Hall on the University campus at Berkeley. The U. S. Forest Service, California Forest and Range Experiment Station, and private industry will cooperate in giving the instruction.

Students at the week-long school will have the opportunity to follow the use of punch cards through several complete problems in forest management. These include making a forest inventory, making a lumber grade recovery study, and making a growth study.

Inquiries should be directed to Ed Gilden, Extension Forester, 25 Walter Mulford Hall, University of California, Berkeley 4, Calif.

Jaenicke Lectures at Oregon State

Oregon State College has announced that A. J. Jaenicke, a veteran of 42 years with the U. S. Forest Service, was appointed a special lecturer in the School of Forestry for the fall and winter terms of the 1956-57 school year. He is teaching courses in forest management and protection.

Jaenicke is a nationally recognized authority in the field of forest insect control and has made many contributions to timber cutting practices, particularly in ponderosa pine.

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Obviously, the Society cannot assume responsibility beyond making it possible for prospective employee and employer to enter into negotiations.

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Forester, B.S.F., University of Washington. Age 33. Married. Seven years varied experience with large and small firms on West coast in log and timber procurement, forest management-engineering, lumber wholesaling and production. Five years as owner-operator of logging and small mill concern. Desire position with progressive firm. Resume on request.
Box E, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, B.S., University of California, 1952. Age 26. Married, 2 children. Forester for U. S. Forest Service 2 years; 2 years lumber industry in production and sales. Desire position in timber management or in lumber production and sales. Prefer California or western states.
Box F, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, Age 24, B.S.F., 1954, Univ. of Massachusetts. Married. Now Air Force Supply Officer; 2 years of procurement, staff work. Was GS-5 Forester, USFS, California, 6 months; cruised, marked, and scaled saw timber; handled timber sales, supervised prison crews on stand improvement and fires. Desires challenging position with opportunity for advancement in procurement or marketing of forest products. Available February.
Box G, Journal of Forestry, Mills Building, Washington 6, D. C.

Consulting Foresters

Approved for Listing on January 1, 1957, by the

SOCIETY OF AMERICAN FORESTERS

The following List of Consulting Foresters is published by the Society of American Foresters for the information of prospective clients.

Individuals listed are members of the Society of American Foresters and as such are believed qualified and competent to perform the technical services specified. However, the Society cannot assume responsibility for the actions of individuals or firms listed.

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*Member, Association Of Consulting Foresters.

Code of Fields of Specialization

1. Arboriculture and tree preservation.
2. Cost and economic studies of forest operations.
3. Forest and wood utilization.
4. Forest management and silvicultural practice.
5. Forest protection from disease.
6. Forest protection from fire.
7. Forest protection from insects.
8. Forest taxation.
9. Game and wildlife management.
10. Logging engineering.
11. Market studies and trade promotion (forest products).
12. Naval stores operations.
13. Pulpwood operations.
14. Range management.
15. Surveying and mapping.
16. Timber valuation and appraisal.
17. Timber volume and quality estimates.
18. Tree planting and reforestation; reproduction studies.
19. Wood preservation.
20. Wood seasoning.
21. Wood technology.

Adirondack Forestry, Inc., Wilmington, New York.
Forest Consultant: David E. Strong.
Territory: Northeastern U. S. esp. Adirondack Mountains.
Specialization: 3, 4, 5, 6, 7, 8, 9, 15, 16, 17, 18, 19. Also aerial photo interpretation, timberland and brokerage service, and forest plantation management.

Raymond D. Adolph, 44 Roe Park, Highland Falls, New York.
Territory: Southeastern New York.
Specialization: 4, 5, 6, 7, 18.

Ernest E. Ahler, Forest Consultant, Route 2, Bishop Road, Knoxville 18, Tennessee.
Territory: Southeast.
Specialization: 2, 3, 4, 6, 13, 16, 17, 18. Also preparation, negotiation or advertisement, and administration of timber sales for large and small timber landowners, and boundary line establishment.

Thos. W. Alexander, Consulting Forester, Waynesville, North Carolina.
Territory: South, Central States, and Appalachians.
Specialization: 2, 4, 11, 16, 17.

Glenn O. Antonie, Consulting Forester, 411 South Walnut, Demopolis, Alabama.
Territory: Alabama, Mississippi.
Specialization: 2, 3, 4, 5, 6, 7, 8, 12, 13, 15, 16, 17, 18. Also agent for absentee timber owners; timber sales and cutting supervision; forest litigation.

S. Gayley Atkinson, Consulting Forester, Huntingdon Road, Huntingdon Valley, Pennsylvania.
Territory: Pennsylvania.
Specialization: 1, 18.

Belanger and Bourget, Land Surveyors and Forest Engineers, 86 Cote de la Montagne, Quebec, Canada.

Arthur G. Axtell, Consulting Forester, 16 Old Forge Road, Glens Falls, New York.
Territory: Northeast.
Specialization: 3, 4, 9, 10, 13, 15, 16, 17, 18. Also timber purchases and sales.

***Henry L. Bango**, Consulting Forester, P.O. Box 4072, Shreveport, Louisiana.
Consultants: Frank Gaensehals, Robert T. Branton.
Territory: Northern Louisiana, south Arkansas, east Texas.
Specialization: 3, 4, 5, 16, 17, 18. Also purchase and sale of timbered properties.

George Banzhaf & Company, 662 North Water St., Milwaukee 2, Wisconsin.
Territory: Not Limited.
Specialization: 2, 3, 4, 8, 11, 13, 15, 16, 17.

***W. R. Barnhill**, 113 Gillespie Avenue, Albany, Georgia.
Territory: Southeastern U. S.
Specialization: 4, 17, 18. Also forest damage investigations, tree planting (contract).

Curtis H. Bauer, Consulting Forester, 54 Dearborn Street, Jamestown, New York.
Territory: Western New York and Pennsylvania.
Specialization: 2, 3, 4, 13, 16, 17, 18. In addition to serving the local lumber industry and woodland owners, services are designed for the Christmas tree industry.

Robert C. Beam, Consulting Forester, 708 N. Main Street, Orrville, Ohio.
Territory: Ohio, Pennsylvania, northern West Virginia.
Specialization: 3, 4, 5, 6, 7, 9, 16, 17, 18, 19, 20.
Consultant: M.-Albert Bourget.
Territory: Canada, especial Quebec.
Specialization: 2, 3, 4, 10, 11, 13, 15, 16, 17, 19, 20, 21. Also boundary lines.

Frank W. Bennett & Associates, Consulting Foresters, 4767 Convention St., Baton Rouge, Louisiana. (Field Hdqrs. at Norwood, La. and Natchitoches, La.)
Consultants: Frank W. Bennett, Herman Varnado, Alvin E. Morgan, and Lewis C. Peters.
Territory: Southern U. S.
Specialization: 3, 4, 6, 10, 11, 16, 17, 18. Retained as consultants by medium size landowners (500 to 50,000 acres). Manage all forest land resources, including timber, grazing, wildlife, minerals, etc. Make plant location surveys for large wood using plants (pulp mills).

Bigley and Feiss, Foresters, Inc., 767 Blair Blvd., Eugene, Oregon.
Consultants: Sherman Feiss, John Venator, Howard G. McDowell, and William F. Smith.
Territory: Washington, Oregon, California.

John C. Billingsley, Forest Consultant, 924 Fair Street, Newberry, South Carolina.
Territory: South Carolina and Georgia.
Specialization: 3, 4, 6, 9, 10, 15, 16, 17, 18.

H. F. Bishop, Consulting Forester, Marion, South Carolina.
Territory: South Carolina and southeastern U. S.
Specialization: 3, 4, 6, 8, 10, 13, 15, 16, 17, 18.

L. L. Bishop, Forest Consultant, 7034 Airline, Houston 9, Texas.
Territory: East Texas.
Specialization: 4, 6, 16, 18.

Lewis M. Boice, Consulting Forester, Orangeburg, South Carolina.
Territory: Within 100 miles of Orangeburg.
Specialization: 4, 6, 15, 16, 17.

H. E. Bovay, Jr., Consulting Engineers, 933 W. Third Ave., Spokane 4, Washington.
Carl R. Dion, Forester.
Territory: Inland Empire.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 21. Also timber sales contract preparation and admiinstration, ownership and cutting line establishment, growth and yield computations.

***William J. Bozett**, Consulting Forester, Logan, Ohio.
Territory: Unlimited.
Specialization: 2, 3, 4, 5, 6, 7, 10, 11, 13, 15, 16, 17, 18, 20. Forest management and marketing, land acquisition for investors, damage appraisals, Christmas tree management and tree planting, serving industry.

Allen W. Bratton, Consulting Forester, Shelterwood, Cooperstown, New York.
Territory: Northeast.
Specialization: 4, 5, 6, 7, 8, 11, 15, 16, 17, 18.

Brown and Brown, Forest Engineers, 614 Lewis Building, Portland 4, Oregon.
Consultants: Eugene R. Walsh (S.A.F. Associate Member), Samuel Rotschy.
Territory: Pacific coast.
Specialization: 2, 3, 4, 6, 8, 10, 11, 12, 15, 16, 17, 18.

Nelson C. Brown, Consulting Forester, 122 Dorset Road, Syracuse 10, New York. During summers, Milford, Pa.
Territory: Northeast.
Specialization: 2, 3, 8, 10, 11, 13, 16, 17.

Paul E. Bruns, 119 Mount Avenue, Missoula, Montana.
Territory: Not limited.
Specialization: 2, 4, 8, 11, 16, 17.

Henry Bull, 1514 Fern Street, New Orleans 18, Louisiana.
Territory: Not limited.
Specialization: Ghost-writing and professional assistance in the preparation of forestry manuscripts and reports.

Charles H. Bunting, Timber Cruiser, 2455 Placer St., Redding, California.
Territory: California.
Specialization: 2, 10, 15, 16, 17.

Robert H. Cain, Consulting Forester, 1423 College Drive, Pineville, Louisiana.
Territory: Louisiana.
Specialization: 4, 6, 7, 13, 16, 17, 18. Timberland agent, private and industrial.

Cal-Pacific, Forest Consultants, 3030 Pope Ave., Sacramento 21, California.
Consultants: James E. Greig, Harvey A. Striplin, Jr.
Specialization: Timber management, cruising, sales.

***N. D. Canterbury**, Consulting Forester, Parklane Apts. 310, 5701 Jackson St., Houston 4, Texas.
Territory: Texas and southeastern U. S.

Capital Forestry Co., Inc., 2967 Troy Road, Schenectady 9, New York.
Consultant: Ernest L. Handy, Forester & Landscape Architect.
Territory: New York, New England States, Pennsylvania, and New Jersey.
Specialization: Timber cruising, marking and marketing studies. Arboriculture, landscape designing and planting. Tax and insurance appraisals. Experienced in court testimony as qualified expert.

Dudley C. Carey, 116 Fairmeade Road, Louisville 7, Kentucky.
Territory: Not limited.
Specialization: Forest and wood utilization, wood preservation, wood seasoning, wood technology. Also planning for wood conversion operations.

Carl M. Carpenter, Consulting Forester, Nashville, Indiana.
Territory: Indiana.
Specialization: 2, 4, 5, 6, 15, 16, 17, 18.

Clifford B. Carts, Consulting Forester, Box 267, Coudersport, Pennsylvania.
Territory: Pennsylvania, New York, Ohio.
Specialization: 3, 4, 8, 10, 11, 15, 16, 17, 18. Also timber trespass and timber damage appraisal; management agent for timberland owners.

C. Dana Chalfant, R. D. No. 3, Gibsonia, Pennsylvania.
Territory: Central and western Pennsylvania, eastern Ohio, northern West Virginia.
Specialization: 4, 6, 9, 16, 18.

Ralph E. Chamberlin, Consulting Forester, River House 810, 2311 N. Front Street, Harrisburg, Pennsylvania.
Territory: Eastern United States.
Specialization: 2, 4, 15, 16, 17, 18. Also timber investment, farm and forest real estate, forest tree nurseries, Christmas tree management, and Harrisburg representative.

Charles Edward Cheston & Company, Forest Land Management Consultation, The University of the South, Sewanee, Tennessee.
Specialization: 2, 4, 6, 10, 11, 13, 15, 16, 17, 18, 20, 21.

Edward J. Clancy, 1916 Sylvan Road, S.W., Atlanta, Georgia.
Territory: Northern Georgia and adjoining states.
Specialization: 4, 15, 16, 17. Also agent for timber owners.

Floyd F. Clark, Consulting Forester, Sky Ranch, Box 756, Ocala, Florida.
Territory: Southeast.
Specialization: 2, 3, 4, 6, 8, 9, 12, 13, 14, 15, 16, 17, 18. Also sale of timber properties; combined timber—cattle operations in the Southeast; insurance company representation for timber and range land.

Stuart F. Clark, Consulting Forester, Box 144, Bellaire, Texas.
Territory: Southern U. S.
Specialization: Forest management, appraisals, investments.

Francis H. Clifton, Private Forester, P. O. Box 326, DeLand, Florida.
Territory: Southeast U. S. A.
Specialization: 3, 4, 13, 16, 17. Registered real estate broker. Forestry exhibits.

D. Irving Cobb, 447 W. French St., Willows, California.
Territory: California.
Specialization: 2, 3, 4, 8, 10, 15, 16, 17, 18.

John D. Coffman, 1759 Spruce St., Berkeley 9, California.
Territory: Principally California.
Specialization: 5, 6, 7, 16. Also forest and park recreational management.

***T. S .Coile**, Land Consultant, Rt. 2, Box 376, Durham, North Carolina.
Specialization: Soil productivity and its implications in forest land management. Soil surveys and their interpretation for forest management. Forest management planning based on integration of ecological and financial factors. Land evaluation.

Commercial Foresters, Inc., P. O. Box 1274, Asheville, North Carolina.
Territory: Appalachian and Southeastern.
Specialization: 2, 3, 4, 10, 11, 13, 16, 17, 18. Also complete timber marking and sale service and watershed management.

Connwood, Inc., P. O. Box 111, Rockfall, Connecticut.
Consultants: Ralph C. Hawley, Michael M. Pochan, Jr., Sherman H. Perkins.
Territory: Connecticut and adjacent areas.
Specialization: 3, 4, 10, 11, 13, 15, 17, 18, 19, 21.

David B. Cook, Consulting Forester, 12 McPherson Terrace, Albany 6, New York.
Territory: Eastern New York.
Specialization: Planted larch.

***Philip T. Coolidge**, Consulting Forester, retired. Box 102, Bangor, Maine.
General forestry.

William T. Cox, Consulting Forester and Biologist, 2186 Doswell Avenue, St. Paul 8, Minnesota.
Territory: General.
Specialization: Appraisals of forest properties; development of furbearers and other wildlife; selection of new locations for woodworking plants.

Porcius F. Crank, Jr., Consulting Forester, Point Harbor, Currituck County, North Carolina.
Territory: North Carolina and Virginia.
Specialization: 4, 5, 6, 7, 13, 15, 16, 17, 18. Also registered surveyor.

***Keith Cranston**, Leland, Mississippi.
Territory: Mississippi River Delta, and entire Gulf States Hardwood Bottomlands and Pine Types from Tennessee-Kentucky south.
Specialization: Bottomland Hardwood management, and supplemental commercial cruising. Retained in consultant capacity by firms operating in the South, and as Consultant-Manager for private landowners of bottomland hardwood and pine tracts.

Lucas M. Dargan, Consulting Forester, P. O. Box 167, Darlington, South Carolina.
Territory: Coastal Carolinas.
Specialization: 4, 6, 9, 16, 17, 18.

***John F. Davis,** Ironshire and Mumford, Snow Hill, Maryland.
Territory: Eastern and Southeastern states.
Specialization: 2, 3, 4, 11, 13, 16, 17, 18.

Paul B. Davis, Consulting Forester, 118 E. Malta Road, Oak Ridge, Tennessee.
Territory: Tennessee, Kentucky.
Specialization: 1, 2, 3, 4, 13, 16, 17, 18.

Randle J. Dedeaux, Consulting Forester, P. O. Box 57, Perkinson, Mississippi.
Consultants: Randle J. Dedeaux, Buford Smith.
Territory: Southern Mississippi; longleaf and slash pine types.
Specialization: 4, 13, 15, 17. Also growth studies, timber marking and marketing, and agent for absentee timberland owners.

Deep South Consulting Foresters, 961 Briarcliff Road, Tallahassee, Florida.
C. H. Schaeffer, Chief Forester.
Territory: Alabama and south Georgia.
Specialization: 1, 6, 7.

Di Stefano & Wessel, Attorneys and Counsellors at Law, 1411 Walnut Street, Philadelphia 2, Pennsylvania.
Consultant: Henry Wessel.
Territory: Northeast and Middle Atlantic Region.
Specialization: 2, 8, 11, 15, 16, 17. Also general business problems including the formation of partnerships, corporations, financing and litigation; timber sales, probate work, estate planning and taxation.

W. T. Doherty, Consulting Forester, 421 Morningside Dr. N.E., Albuquerque, New Mexico.
Territory: Arizona, New Mexico.
Specialization: 4, 15, 16, 17. Also land classification.

Eastern Forestry, Inc., Box 129, Hampton, Virginia, and Hertford, North Carolina.
Operating and Consulting Foresters: *Edward Stuart, Jr., Robert E. Gustafson.
Territory: Eastern U. S.
Specialization: 2, 3, 4, 10, 11, 13, 14, 15, 16, 17, 18. Also investigations and arbitration of claims; operational management in manufacturing and marketing of forest products.

William A. Eastman, Jr., Consulting Forester, William A. Eastman & Co., Inc., 410 Green Building, Seattle 1, Washington.
Territory: Pacific Northwest.
Specialization: 10, 15, 16, 17, 18. Also preparation and administration of timber sales, land appraisal, timberland brokerage, and timberland management.

W. G. Edwards, 503 West Fairmount Ave., State College, Pennsylvania.
Specialization: 3, 10, 13, 15, 16, 18. Also small sawmill problems, both logging and milling phases.

Inman F. Eldredge, Sr., 1354 Moss Street, New Orleans 19, Louisiana.
Territory: Lower South.
Specialization: Resource surveys for large operations; advice and counsel in large-scale land purchase programs; consultation with forestry staffs on management policy and practice in larger operations.

Employment Service, Forestry Personnel, Leland, Mississippi.
Consultant: Keith Cranston, Personnel director.
Specialization: Personnel placement service provided professional foresters and timbermen.

L. J. Enright, Consulting Forester, 322 Scott Drive, Silver Spring, Maryland.
Territory: Maryland; not limited.
Specialization: 1, 6, 15, 18. Also park management and policy; landscape planting and design.

Farmcraft Associates, Inc., Forest Managers, 619 Washington Street (Box 4344), Alexandria, Louisiana, Box 293, Eunice, Louisiana, and 125 Dixie, Oakdale, Louisiana.
Consultants: John J. Carroll and Printis E. Murphy.
Territory: Southern U. S.
Specialization: Forest investments and technical forest management for private and industrial holdings. Also litigation and damage appraisals.

Fenner & Day, Company, Inc., Forest Fire Protection Engineering, 4355 Bermar Avenue, Richmond 11, Calif.
Consultant: Ralph L. Fenner.
Territory: California.
Specialization: 2, 4, 6, 14. Wildland fire control and use.

***David S. Findlay,** Consulting Forester, 20 East 5th Street, Jamestown, New York.
Territory: Western New York and Pennsylvania.
Specialization: 4, 15, 16, 17.

George M. Fisher, Consultant Landscape Forester, P. O. Box 971, Tyler, Texas.
Territory: Northeastern Texas.
Specialization: 1, 5, 7, 9, 18. Also city forestry and shade tree problems; landscape design, construction, and maintenance; forest parks and recreational planning.

Reginald D. Forbes, Consulting Forester, R.F.D. 1, Ambler, Pennsylvania.
Territory: Eastern U. S.
Specialization: 4, 6, 17, 18. Also forest resource surveys of timber available to manufacturing plants in specified territories.

Forest Land Management Co., P. O. Box 1046, Morgantown, West Virginia.
Consultant: Thomas G. Clark.
Territory: West Virginia, Western Pennsylvania, Western Maryland.
Specialization: Forest land appraisal, forest real estate, timber sales, and markets.

Forest Products Management Company, 1504 Broad Street, Camden, South Carolina.
Consultant: H. R. Oliver.
Territory: Carolinas.
Specialization: 3, 4, 6, 11, 13, 15, 16, 17, 18, 20. Also land appraisals, timber and land sales. South Carolina registered land surveyor and dogwood and hickory industry consultant.

Forestry Associates, Inc., P. O. Box 72, Hart, Michigan.
Territory: Michigan.
Specialization: 3, 4, 5, 6, 7, 9, 11, 13, 15, 16, 17, and 18.

Forestry Consulting Services, Deluxe Building, 297 West Michigan Avenue, Jackson, Michigan.
Consultant: George D. Blair.
Territory: Nationwide.
Specialization: 1, 2, 4, 11, 16, 19. Also various forest growth and vegetative control planning services to public utility industry.

Forestry Suppliers, Inc., Consulting Foresters and Suppliers, Battlefield Station, Jackson 4, Mississippi.
Consultants: *James W. Craig, Ivo W. Miller, and Purvis R. Huff.
Territory: Gulf States.
Specialization: 3, 4, 6, 13, 15, 16, 17, 18. Also forest land analysis and management, growth studies, timber and land sales, and a complete line of supplies and equipment for foresters and timber owners.

John S. Forrest, Consulting Forester, 275 W. Van Duyn, Eugene, Oregon.
Territory: Douglas-fir region.
Specialization: 2, 3, 4, 6, 15, 16, 17, 18. Also negotiation and administration of private timber sale contracts; aerial photography procurement contracts; property management for absentee owners; industrial inventory and sustain yield programs.

E. A. Foster, Apt. 3, 1027½ S. Florida Ave., Lakeland, Florida.
Territory: Southeastern United States.
Specialization: 2, 4, 5, 6, 7, 8, 13, 15, 16, 17, 18. Also timber marketing services and aerial photo interpretation.

R. C. Fraunberger. Forest Products Business Consultant, 626 Black Rock Road, Bryn Mawr, Pennsylvania.
Specialization: 2, 3, 4, 10, 11, 16, 17, especially in hardwoods, domestic and foreign.

***E. A. Friend, Jr.,** 1008 Delaware Avenue, Suffolk, Virginia. (Inactive.)
Territory: Tidewater and Eastern Shore of Virginia, Northeast North Carolina.
Specialization: 4, 15, 16, 17. Absentee landowners' agent, damage, trespass, and condemnation claims.

Emanuel Fritz, Consulting Forester, 102 The Uplands, Berkeley 5, California.
Territory: West; pine, redwood, and fir.
Specialization: 2, 3, 4, 6, 10, 11, 16, 17, 18, 19, 20, 21. Also consultant on state forest and park management and policy.

LeRoy Frontz, Consulting Forester, Allenwood, Pennsylvania.

Territory: Eastern U. S.
Specialization: 3, 4, 5, 6, 7, 9, 16, 17, 18. Also landscaping, forest and ornamental nurseries, farm forestry, forest parks and recreation, landuse planning, soil conservation, farm evaluation and appraisal.

Edward P. Furlow, 810 Gouthier Road, Falls Church, Virginia.
Territory: Virginia, Maryland, West Virginia.
Specialization: 2, 3, 4, 6, 8, 13, 16, 17, 18, 19, 20.

William E. Garvey, Jr., La Plata, Maryland.
Territory: Southern Maryland.
Specialization: Timber cruising, appraisal and marking.

Paul H. Gerrard, 312 E. 3rd St., Russellville, Arkansas.
Territory: Arkansas.
Specialization: 4, 6, 16, 17, 18.

A. R. Gobeil, Consulting Forest Engineer, 100 d'Youville Square, Quebec, Canada.
Territory: Province of Quebec.
Specialization: 2, 3, 4, 7, 9, 10, 11, 13, 15, 16, 17. Also broker in timber properties and forest limits.

Nathan B. Golub, Consulting Forester, Buckstone Farm, Washington Crossing, Pennsylvania.
Territory: Pennsylvania and New Jersey.
Specialization: 4, 15, 16, 17, 18. Also water management plans. Registered engineer and surveyor in Pennsylvania.

Vernon A. Good, Consulting Forester, American Bank Building, Portland, Oregon.
Territory: Oregon, Washington, Idaho, Northern California.
Specialization: 2, 4, 8, 13, 14, 16, 17, 18. Forest property management, timber marking, sales contracts and supervision, acquisition, aerial photo inventory, fire damage appraisals, and timber tax assistance. Also watershed and land use management.

Paul N. Goodmonson, Consulting Forester, 1355 Alta Vista Drive, Corvallis, Oregon.
Territory: Oregon, Washington, northern California.
Specialization: 3, 4, 9, 13, 15, 16, 17, 19. Complete timber land management, timber sales, timber and land acquisition, and agent for absentee forest owners.

Goodwin & Davis, Consulting Foresters, 6330 Park Avenue, Indianapolis, Indiana.
Consultants: Robert F. Davis, Donald K. Goodwin.
Territory: Indiana.
Specialization: 4, 10, 11, 16, 17, 18.

***R. W. Graeber,** Consulting Forester, 303 Hillcrest Road, Raleigh, North Carolina.
Territory: North Carolina.
Specialization: 4, 6, 13, 16, 17, 18. Also buying and selling timber and timberlands as service to either buyer or seller; adjusting problems arising from over-cutting or trespass.

Green's Timber Service, Johnson City, Tennessee.
Consultant: L. Stanley Green.
Territory: Southeastern U. S.
Specialization: 2, 3, 4, 6, 10, 13, 16, 17, 18. Also custom sawmilling.

W. H. Griffith, Forester and Surveyor, 1001 Ouchita Bank Building, Monroe, Louisiana.
Territory: Southern United States.
Specialization: 15, 16, 17.

Kenneth Wayne Guenther, Forest Products Industrial Engineer, 2524 Koos Bay Blvd., Coos Bay, Oregon.
Territory: Oregon, Washington, and California.
Specialization: Those fields relative to the industrial engineering applications to the forest products industries.

John G. Guthrie, Consulting Forester, Wiggins, Mississippi.
Territory: Mississippi, Louisiana, Alabama.
Specialization: 4, 6, 12, 13, 16, 17, 18. Also agent for absentee owners. Land sales and acquisition. Timber stand improvement (weed tree elimination). Long-term management. Large scale planting. Timber marking and marketing.

Alvin B. Hafer, Consulting Forester, Laurinburg, North Carolina.
Territory: North Carolina, South Carolina, and Southeast.
Specialization: 4, 15, 16, 17. Also purchase and sale of timbered properties.

E. C. Haff, Consulting Forester, 836 Edisto Ave., Orangeburg, South Carolina.
Specialization: Managing forest lands.

***Albert G. Hall and Associates,** 810 18th Street, N.' W., Washington 6, D. C.
Consultants: Charles M. Schwartz, McClain B. Smith, Jr.
Specialization, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 16, 17, 18. Also Washington representative.

Giles G. Hall, Professional Forester, 402 Cumberland Avenue, North Augusta, South Carolina.
Territory: South Carolina, Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 10, 11, 13, 16, 17, 18. Also tree pruning in planted stands. Sawtimber and pulpwood buyer.

***Jack M. Hall,** Consulting Forester, P. O. Box 285, Moultrie, Georgia.
Territory: Georgia, Florida, Alabama, and South Carolina.
Specialization: 4, 5, 6, 7, 11, 12, 15, 16, 17, 18. Also contract tree planting.

Francis G. Hambrook, Consulting Forester, East Sandwich, New Hampshire (mailing address, R.F.D., Center Harbor, N. H.).
Territory: New Hampshire.
Specialization: 2, 4, 15, 17. Also management of timber properties and agent for absentee landowners, selective cutting, timber marking and marketing assistance, timber stand improvement work, including improvement cuttings in immature stands.

Carl Hammarstrom, Consultant Forester, P. O. Box 48, Bude, Mississippi.
Territory: Southwest Mississippi.
Specialization: 4, 15, 16, 17, 18, timber sale administration, damage claims, county surveyor.

Hammon, Jensen, and Wallen, Mapping and Forestry Services, 660 Hegenberger Road, Oakland 21, California.
Consultants: Herbert A. Jensen, Arnold F. Wallen.
Territory: United States, Central and South America, and foreign.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18. Also planimetric and topographic mapping, land net delineation, general land classification for appraisal purposes and ranchland management, and aerial photogrammetric consulting service.

David H. Hanaburgh, Consulting Forester, Buchanan, New York.
Territory: Northeast.
Specialization: 2, 3, 4, 9, 10, 11, 13, 16, 17. Also negotiation of rights for hunting, fishing, trapping, and water storage.

Gene M. Harris, Registered Consulting Forester, 2112 Hagan Drive, Tallahassee, Florida.
Territory: Florida, Georgia, and Alabama.
Specialization: 3, 4, 5, 6, 7, 8, 9, 12, 13, 15, 16, 17, 18.

Arthur W. Hartman, Consulting Forester, 22 Princeton Way, N. E., Atlanta, Georgia.
Territory: Southern states.
Specialization: 4, 6. Prescribed burning, development planning, training and execution in silvicultural uses of fire with planned management of southern pines and for control of hazardous fuels. Also, fire protection planning, especially determining components of balanced mechanized fire control facilities and their tactical uses. (Registered forester, Georgia.)

Joseph F. Havel, Box 11, Pawley's Island and Georgetown, South Carolina.
Territory: North Carolina, South Carolina, Georgia, and Florida.
Specialization: 3, 4, 10, 11, 13, 16, 17.

E. T. Hawes, Consulting Forester, 2204 White Oak Drive, Valdosta, Georgia.
Territory: Southeast.
Specialization: 2, 4, 8, 11, 12, 13, 16, 17, 18.

Ralph W. Hayes, Consulting Forester, 2241 Myrtle Avenue, Baton Rouge, Louisiana.
Territory: Gulf States.
Specialization: 2, 3, 13, 15, 16, 17. Also investigation and settlement of claims regarding timber in use in the South.

George S. Haynes, Consulting Forester, S. 321 Bowdish Road, Opportunity, Washington.
Territory: Western Montana, northern Idaho, eastern Washington.
Specialization: 4, 6, 10, 15, 16, 17, 18.

V. W. Herlevich, Consulting Forester, 3627 Stratford Blvd., Wilmington, North Carolina.
Territory: North Carolina, South Carolina.
Specialization: 4, 6, 15, 16, 17, also forest fire damage appraisals.

***Halsey M. Hicks,** Consulting Forester, Box 575, Brattleboro, Vermont.
Territory: Not limited.
Specialization: 2, 3, 4, 8, 15, 16, 17.

Monterey L. Holst, Consulting Forester, P. O. Box 125, East Greenwich, Rhode Island.
Territory: New England.
Specialization: 3, 4, 6, 9, 10, 13, 15, 16, 17, 18, 21.

Douglas F. Horan, Consulting Forester, 316 Windsor Street, Lakeland, Florida.
Territory: Southeastern United States, Central and South America.
Specialization: Complete timber sales service, foreign timber investigations, agent for absentee timber owners.

William P. House, Consulting Forester, Chesham, New Hampshire.
Territory: New Hampshire and adjacent areas.
Specialization: 2, 3, 4, 16, 17. Marking and stumpage sales.

Richard F. Howard, Forestwald, Box 14, Franklinville, New York.
Territory: Pennsylvania, New York, New England.
Specialization: 3, 4, 6, 15, 16, 17, 18.

***T. M. Howerton, Jr.,** Forestry Consultant, Madison, Florida.
Territory: Southeastern states.
Specialization: Marketing, Management.

John E. Hudson, 806 N. W. 21st Terrace, Gainesville, Florida.
Territory: Southeastern United States.
Specialization: 4, 12, 16, 17.

G. W. Hult, Consulting Forester, 3029 Johnson Street, Corvallis, Oregon.
Territory: Oregon, California, and southwestern U. S.
Specialization: 4, 16, 17. Forest fire insurance investigations. Timber sales, acquisition, and exchanges.

LeRoy W. Huntington, Consulting Tropical Forester, 52 Wesley Street, Baldwin, New York.
Territory: Latin America, Orient, Africa.
Specialization: 2, 3, 4, 10, 11, 15, 16, 17, 18; and tropical hardwoods.

R. Wilson Hutchison, Consulting Forester and Logging Engineer, 167 Walnut Lane, Eugene, Oregon.
Territory: Washington, Oregon. California.
Specialization: 2, 3, 4, 6, 10, 15, 16, 17. Registered professional engineer of the State of Oregon.

Intermountain Timber Service, 4101 State Street, Boise, Idaho.
Consultant: Thomas C. Clifton.
Territory: Idaho and a portion of eastern Oregon.
Specialization: 2, 4, 6, 8, 15, 16, 17. Also logging road construction cost studies, and logging cost studies made. Buying and selling of timber and timberlands as a service to either buyer or seller.

***Gorham E. Jackson,** Consulting Forester, 604 West Main Street, Washington, North Carolina.
Territory: Eastern North Carolina, southeastern Virginia. All forest types.
Specialization: 2, 4, 6, 9, 10, 13, 15, 16, 17, 18. Also investigations of forest resources for pulp and paper companies, and land agent for absentee timberland owners.

***Stephen L. Jacobs,** R. F. D. #3, Gorham, Maine.
Territory: Southern Maine.
Specialization: 4, 8, 15, 16, 17, 18. Also tree marking.

William E. Jackson, Jr., Forest Engineer, R. F. D. #1, Lexington, Kentucky.
Territory: No limitations.
Specialization: Timberland evaluation, acquisition, investments, management, marketing, litigation and damage appraisal, forest taxation.

Alex J. Jaenicke, 3040 N. E. 14th Avenue, Portland 12, Oregon.
Territory: Oregon, Washington, California, Idaho, and Montana.
Specialization: 4, 5, 7. Also volume estimates of insect- and disease-killed timber and rates of deterioration for management and taxation purposes.

M. E. Jelley, Consulting Forester, 122 Haywood Avenue, Chattanooga 5, Tennessee.
Territory: Southeastern and eastern states.
Specialization: 2, 3, 4, 10, 11.

David G. Jennings, Consulting Forester, P. O. Box 467, Port Jefferson, New York.
Territory: New York.
Specialization: 1, 3, 4, 6, 15, 18.

***F. J. G. Johnson and Associates,** Suites 12 & 13, 425 Howe Street, Vancouver 1, B. C., Canada.
Territory: British Columbia (no regional limitation).
Specialization: 2, 3, 4, 6, 11, 15, 16, 17.

Ralph S. Johnson, Laurinburg, North Carolina.
Territory: Eastern Carolinas.
Specialization: 3, 4, 6, 13, 15, 16, 17.

Robert W. Jones, 7723 S. E. 27th, Mercer Island, Washington.
Territory: Washington.
Specialization: 10, 11, 15, 16, 17, 18. Also photogrammetry and court cases concerning boundary disputes.

E. V. Jotter, Consulting Forester, 30 Cedarlawn Drive, Dayton 5, Ohio.
Territory: Ohio, Kentucky.
Specialization: 3, 4, 6, 9, 11, 16, 17, 18. Also development and management of community forests conservation education, cooperation with soil conservation districts.

Frank E. Karpick, 130 Kay St., Buffalo 15, New York.
Territory: Northeastern United States.
Specialization: 1, 5, 7, and planning and maintenance programs for municipal shade trees.

***S. G. Keedwell & Company,** Consulting Foresters, Emporia, Virginia.
Territory: Eastern and southern U. S.
Specialization: 3, 4, 10, 11, 13, 15, 16, 17. Also forest litigation and purchase and sale of land and timber.

John F. Kellogg, Forester, Box 135, Elizabeth, Louisiana.
Territory: Louisiana; pine and hardwood.
Specialization: 4, 5, 11, 16, 17.

***George C. Kiefer, Jr.** Consulting Forester, Salisbury, Connecticut.
Territory: Southern New England, eastern New York.
Specialization: 4, 6, 8, 15, 16, 17, 18. Also management of timber properties and plantations, timber marking and marketing, watershed management, and agent for woodland owners.

H. Thorn King, Consulting Forester and Land Surveyor, Hancock, New Hampshire.
Territory: Southwestern New Hampshire.
Specialization: 2, 3, 4, 15, 16, 17, 18. Also tree farming; marking; registered land surveyor.

G. Ed. Knapp, Consulting Forester, 661 Forest Hill Road, Macon, Georgia.
Territory: Southern states.
Specialization: 2, 3, 4, 10, 11, 13, 16, 17, 18.

Robert F. Knoth & Company, Foresters, Appraisers, Surveyors, 132 East Bay Street, Charleston 3, South Carolina.
Consultant: *Robert F. Knoth.
Territory: Domestic and foreign.
Specialization: 4, 6, 10, 11, 13, 15, 16, 17, 18. Land agent for absentee timberland owners; foreign timberland investigations; veneer log procurement; timber acquisitions, sales, investments and loans.

Arthur Koehler, Wood Technologist, 1959 Thayer Ave., Los Angeles 25, California.
Specialization: Wood utilization.

J. Hugo Kraemer, Consulting Forester, 249 Lark Street, Albany 10, New York.
Territory: New York and New England.
Specialization: 2, 3, 4, 6, 11, 15, 16, 17, 18, 21. Also timberland management and research projects.

F. Bruce Lamb, Tropical Forestry Consultant, Box 327, Canon City, Colorado.
Territory: Mexico, Central and South America, and Caribbean Islands.
Specialization: 2, 3, 4, 10, 11, 15, 16, 17, 18. Mahogany and other tropical hardwoods.

William N. Lane, Forest Management Consultant, 2 Kendall St., Rochester, New Hampshire.
Territory: Northeastern United States.

Specialization: 2, 3, 4, 5, 6, 7, 8, 11, 13, 15, 16, 17, 18. Also damage surveys, forest litigation and timber depletion accounting.

The Langdale Company, P. O. Box 980, Valdosta, Georgia.
Consultants: Harley Langdale, Jr., T. E. Connell.
Territory: Georgia, northern Florida; slash pine belt.
Specialization: 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19.

Frank M. Langford, Waverly, Tennessee.
Territory: Middle Tennessee, South Kentucky, and North Alabama.
Specialization: Timber real estate—evaluations. Utilization specialist in hardwoods.

Lauderburn-White, 1204 Adeline Street, Hattiesburg, Mississippi.
Consultants: D. E. Lauderburn, John B. White.
Territory: South Mississippi and adjacent territory.
Specialization: 4, 11, 16, 17. Complete timber sales service, marking, finding buyers of stumpage, timber sale contracts, supervision and inspection of cutting operations, technical marketing assistance to small sawmills.

Frank J. Lemieux, Consulting Forester, 833 Whitney Building, New Orleans, Louisiana.
Territory: Southern states, Mexico, Central and South America.
Specialization: 2, 4, 6, 13, 15, 16, 17.

Paul C. Lemon, Consulting Forester, State College, Albany 3, New York.
Territory: New York and New England.
Specialization: 1, 6, 9, 14. Also commercial pilot, applications of aviation to forestry.

T. A. Liefeld, Consulting Forester, Thomasville, Georgia.
Territory: Florida, Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, 18.

L. D. Lloyd, Consulting Forest and Logging Engineer, Flying L Ranch, Glenwood, Washington.
Territory: Worldwide.
Specialization: 2, 3, 4, 6, 8, 10, 13, 15, 16, 17.

Harvey J. Loughead, Consulting Forester, 399 Vanderbilt Road, Biltmore Station, Asheville, North Carolina.
Territory: Eastern U. S.
Specialization: 3, 4, 12, 13, 16, 17. Also watershed management.

Robert T. MacDougall, Jr., 124 Cresta Drive, Ukiah, California.
Territory: Coast pine and southern redwood regions of California.
Specialization: Timber cruising, forest management, mapping.

Donald K. Maissurow, Consulting Forester, New Haven Avenue, Derby, Connecticut.
Territory: New England.
Specialization: 1, 4, 5, 7, 15, 16, 17. 18. Also landscape forestry.

Carol W. Marlow, 4232 Redonda Lane, Dayton 6, Ohio.
Territory: Ohio.
Specialization: 1, 5, 7. City shade tree maintenance programs.

E. D. Marshall, Consultant in Forest Products, 541 Humason Ave., Lufkin, Texas.
Territory: Southern and western United States; Mexico, Central and South America.
Specialization: 3, 4, 11, 13, 16, 17, 19, 20, 21.

***Edward A. McAllister,** 311 Lynchburg Avenue, Colonial Heights, Virginia.
Territory: Virginia and Southeast.
Specialization: 3, 4, 9, 10, 11, 13, 16, 17.

Earl M. McChesney, Consulting Forester, 57 New York Street, Bangor, Maine.
Specialization: 1, 4, 15, 16, 17, 18.

Thomas A. McFarland, Forest Consultant, 120 Truman St., Thomson, Ga.
Territory: Georgia.
Specialization: 4, 15, 16, 17, 18.

James T. McMahon, P. O. Box 88, Kountze, Texas.
Territory: Texas and Louisiana.
Specialization: 4, 13, 16, 17, 18. All phases of forest land management.

The Ben Meadows Co., 315 Pharr Road, N. E., Atlanta, Georgia.
Consultants: *Ben C. Meadows, Monroe F. Greene.
Territory: Southeast.
Specialization: 4, 11, 13, 16, 17. Also complete line of forestry tools and equipment for the forester and timber owner.

Philip C. Meinzer, Consulting Forester, Route 3, Kokomo, Indiana.
Territory: Indiana.
Specialization: 1, 4, 16, 17, 18.

Fred B. Merrill, Consulting Forester, Box 261, Clinton, Louisiana.
Territory: Mississippi and Louisiana, within 100 miles of Baton Rouge.
Specialization: 4, 5, 6, 7, 11, 13, 16, 17. Also buying and selling timberlands; training estate and company personnel; and Gaylord pulpwood dealer in East and West Feliciana Parishes.

James W. Meteer Consulting Forester, R. D. 6, Wooster, Ohio.
Territory: Not limited.
Specialization: 2, 3, 4, 11, 16, 17, 18. Also Christmas tree management. Specialist in continuous forest inventory.

William H. Meyer, Consulting Forester, West Rupert, Vermont.
Territory: Northeast.
Specialization: 3, 4, 9, 11, 16, 17, 18. Also farm management and conservation education.

Raymond M. Miller, Consulting Forester, P. O. Box 802, Jamestown, New York.
Territory: Pennsylvania, New York, Ohio.
Specialization: 4, 16, 17. Also timber and lumber marketing service.

Milliken Forestry Co., 31 Heathwood Circle, Columbia, South Carolina.
Consultant: William F. Milliken.
Territory: Southeast, principally South Carolina.
Specialization: 3, 4, 6, 11, 13, 15, 16, 17, 18. Also sustained yield plans and contract tree planting; timberland agent for absentee timberland owners, hardwood-pine conversion and control.

***William J. Mills,** Forest Engineer, 201 Volunteer Building, Chattanooga 2, Tennessee.
Territory: Southeastern states, Mexico.
Specialization: 3, 4, 11, 13, 15, 16, 17.

Malcolm A. Milne, Consulting Forester and Landscape Engineer, 394 Phillips Road, Webster. New York.
Territory: Northeast.
Specialization: 1, 5, 7, 18. Also landscaping, estate development and management, and forest recreation.

R. B. Milne, Consulting Forester, Box 371, Petersburg, Virginia.
Territory: Eastern states; all forest types.
Specialization: 3, 4, 10, 16, 17.

Stuart Moir, Forest Counsel, Western Forestry and Conservation Association, 712 U. S. National Bank Building, Portland 4, Oregon.
Territory: Western United States, British Columbia, Alberta, Canada.

***Robert Moore,** Consulting Forester, Danville, Pennsylvania.
Territory: Not restricted.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18, 19. Also bankruptcy cases, trade association work, coal lands, trusteeship cases, litigation and damage claims, estate problems.

R. A. Morin, Consulting Forester, 2532 Sunset Ave., Greenville, North Carolina.
Territory: Eastern North Carolina.
Specialization: 4, 13, 16, 17, 18. Also growth studies, timber marking and marketing, and agent for absentee timberland owners.

George W. Morrill, Jr., Consulting Forester, R.F.D. #3, Concord, New Hampshire.
Territory: New Hampshire, Maine, Vermont.
Specialization: 4, 13, 15, 16, 18. Also landscaping, forest recreation, and beautification.

Charles H. Moyer, Consulting Forester, R.F.D. #2, Newfield, New York.
Territory: Northeast.
Specialization: 4, 10, 15, 16, 17.

Marion N. Nance, Inland Empire Timber and Land Service, W. 1104 Fifteenth Avenue, Spokane 41, Washington.
Territory: Pacific Northwest.
Specialization: 2, 3, 4, 6, 15, 16, 17. Also timber sale contract preparation and administration; ownership and cutting line establishment; and public domain land status, laws, and regulations.

National Timber Consultants, Box 497, Salem, Missouri.
Consultants: Ed Woods, Charles Kirk.
Territory: Central and southern states.

Specialization: Management information. land appraisal, and valuation, mapping and estimating.

Chris Nelson, Jr., Consulting Forester, Corrigan, Texas.
Territory: Southern and southwestern United States and tropical America.
Specialization: 3, 4, 16, 17, 18.

New England Forest Industries, Inc., 3 North State Street, Concord, New Hampshire.
Consultants: Dr. Gordon M. Day, Contoocook, N. H.; Glenn Bergey, Tamworth, N. H.; Eugene M. Carpenter, Boscawen, N. H.; Robert Eggleston, Alton, N. H.; Bradford Monk, Penacook, N. H.
Territory: New England.
Specialization: Planting, selective logging, appraisals, forest land brokerage, intermediate cuttings, marking, surveys, and cruises.

New England Forestry Foundation, 3 Joy Street, Boston 8, Massachusetts.
Consultants: *J. Milton Attridge, Stanley B. Coville, Frederic P. Elwert, Kenneth E. Jones, Allan W. Plumb, Donald R. Poppema, David A. Rock, Richard L. Sawyer.
Territory: New England.
Specialization: 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18.

New England Silvicultural Service, Athol Road, Petersham, Massachusetts.
Consultant: Fred M. Hunt.
Territory: Central New England.
Specialization: 4, 10, 15, 16, 17, 18. Also management of pine plantations.

Samuel A. Newman, P. O. Box 156, Everett, Washington.
C. C. Lloyd, Associate.
Territory: Washington.
Specialization: 8, 10, 15, 16, 17.

Nittany Timberlands, Inc., P.O. Box 191, State College, Pennsylvania.
Consultants: R. A. Bartoo, Richard C. Bedger, R. M. Pyle, Orvel A. Schmidt, Frank J. Wawrynovic, David Worley.
Territory: Pennsylvania.
Specialization: 4, 9, 13, 16, 17, 18.

***Leon A. Nix**, Consulting Forester and Logging Engineer, 260 N. Main St., Brampton, Ontario, Canada.
Territory: Not limited.
Specialization: 2, 3, 4, 6, 10, 13, 15, 16, 17. Also farm woodlot management.

Northeast Forestry Service, R. D. 1 (Pike County), Hawley, Pennsylvania.
Consultants: Stanley Mesavage and Walter Kaulfuss.
Territory: Northeast and Middle Atlantic Region.
Specialization: 3, 4, 10, 11, 15, 16, 17.

Northern Timber Services, Curtis R. Lytle, Consulting Forester, Box 365, Wellsboro, Pennsylvania.
Territory: North central Pennsylvania.
Specialization: 4. Also sugar-bush and Christmas tree, management.

Northern Tree Co., Inc. Petoskey, Michigan.
Consultants: *Thomas F. Schweigert, George E. Young and William J. McDowell.
Territory: Michigan.
Specialization: 1, 4, 5, 6, 7, 15, 16, 17, 18. Also contract tree planting; registered land surveyor.

Ernest Nutting & Co., Consulting Forester, Box 51, Camden, South Carolina.
Territory: The Carolinas and Georgia.
Specialization: 4, 13, 15, 16, 17, 18. Serving timberland owners.

W. R. Owens, Consulting Forester, 3902 North Street, Nacogdoches, Texas.
Territory: Southwest.
Specialization: 15, 16, 17.

***Charles R. Page, Jr., and Associates**, Forest Land Managers and Consultants, 415 Friar Road, Chattanooga 11, Tennessee.
Associate: George W. Holston, Jr.
Territory: Southeastern states.
Specialization: 4, 7, 11, 15, 16, 17.

Panhandle Timber and Land Service, Box 177, Coeur d'Alene, Idaho. Phone: MOhawk 4-2015 or MOhawk 4-3340
Consultant: Roberts S. Nobis.
Territory: Inland Empire.
Specialization: 2, 3, 4, 6, 15, 16, 17. Also timber sale contract administration: ownership and cutting line establishment; and public domain land status, regulations, and application forms.

Penta Post and Treating Co., Box 5, Tuttle, Idaho, and 6806 Fairfield, Boise, Idaho.
Consultant: Steele Barnett.
Territory: Idaho.
Specialization: 1, 2, 3, 4, 6, 14, 15, 16, 17, 18, 19.

Pomeroy & McGowin, Forest Managers, Monticello, Arkansas and Chapman, Alabama.
Consultants: L. K. Pomeroy, Julian F. McGowin (S.A.F. Associate Member), *Z. W. White, T. R. Scott, Jr., W. V. Gandy, D. W. Samson.
Territory: Southern states, South America.
Specialization: 4, 8, 11, 13, 16, 17, 18. Also aerial forest surveys.

Pond & Moyer, Inc., Co., Consulting Foresters, 107 Homestead Road, Ithaca, New York.
Consultant: *James D. Pond.
Territory: New York and Northeast, Latin America; northern hardwoods, spruce-fir, central hardwoods, tropical woods.
Specialization: 1, 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18, 21.

Prentiss & Carlisle Company, Inc., Timberland Service—Engineers, 107 Court Street, Bangor, Maine.
Consultants: George T. Carlisle, Philip P. Clement, Robert W. Averill, George D. Carlisle, Edward K. Brann and William D. Barron.
Territory: United States, Canada.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18.

W. H. Price, Forest Consultant, 2626 West Lynn Street, Seattle 9, Washington.
Specialization: 1, 4, 6, 7, 8, 16, 17.

John G. Rawls Co., Consulting Foresters, 2793 Pinewood Drive, Macon Georgia.
Consultant: John G. Rawls (S.A.F. Affiliate Member).
Territory: Southeast.
Specialization: 10, 12, 13, 15, 16, 17.

A. B. Recknagel, P. O. Box 15, Ithaca, New York.
Territory: Anywhere in continental United States.
Specialization: Forest management, forest utilization (particularly pulp and paper).

***Tom Reimer**, Consulting Forester, Box 395, Albany, Georgia.
Territory: No restrictions.
Specialization: 2, 3, 4, 6, 10, 12, 13, 15, 16, 17, 18.

Charles E. Reynolds, 4150 S. W. 110 Avenue, Beaverton, Oregon.
Territory: Washington, Oregon, and Northern California.
Specialization: 4, 10, 15, 16, 17, 18.

Owen L. Riley, Consulting Forester, P. O. Box 31, Pine Mt. Valley, Georgia.
Territory: Georgia and Alabama.
Specialization: 4, 7, 9, 16, 17. Also agent for timberland owners; timber marketing and assistance; damage appraisal; aesthetical forestry practices; planning for special forest areas, private parks, etc.

Robinson Improvement Company, St. Augustine National Bank, St. Augustine, Florida.
Consultant: Allen D. Nease.
Territory: Florida and South Georgia.
Specialization: 2, 3, 4, 5, 6, 7, 9, 12, 13, 15, 16, 17, 18.

A. P. Russell, Forest Engineer, 11 Maplewood Drive, Sumter, South Carolina.
Territory: Not limited, but principally southern region.
Specialization: 2, 3, 4, 10, 11, 13, 15, 16, 17, 18. Also forest resource surveys for industry, timberland acquisition and sales, contract logging supervising, log scaling and grading.

Sable Mountain Corporation, 68 Phillips Street, Rutland, Vermont.
Consultant: *Richard C. Rose.
Territory: Central Vermont.
Specialization: Woodland management, including marking and marketing of standing timber and trained work crew for planting, pruning, and timber stand improvement. Also operate own forest.

Eino Sainio, Consulting Forester, 320 W. Helen St., Newberry, Michigan.
Territory: Eastern Upper Peninsula of Michigan.
Specialization: 3, 4, 13, 15, 16, 17. Registered land surveyor and registered forester.

Leslie A. Sample, Consulting Forester, 9025 Mansfield Road, Shreveport, Louisiana.
Territory: Arkansas, Louisiana, Texas.
Specialization: 3, 4, 7, 13, 15, 16.

Paul M. Sanders, Consulting Forester, 916 Yeon Bldg., Portland 4, Oregon.
Territory: Unrestricted.
Specialization: 2, 4, 6, 8, 15, 16, 17, 18. Property management for absentee owners.

Roy Dale Sanders, Visual Education Technician, Rural Route 6, Evrodale, Brainerd, Minnesota.
Territory: Unlimited.
Specialization: Forester, wildlife technician, photographer. The entire production supervision of 16 millimeter color educational motion pictures, including script writing, direction, photography, editing, and sound supervision. Also production of color and black and white still picture visual education material.

Sandhill Forestry Company, 206 Surginor Road, Rockingham, North Carolina.
Consultant: Walter J. Marshburn. Jr.
Territory: Southeastern United States.
Specialization: 3, 4, 6, 13, 16, 17, 18. Also woodland property sales.

L. E. Sawyer, RR #1, West Terre Haute, Indiana.
Territory: Southwestern Indiana and southeastern Illinois.
Specialization: 4, 5, 6, 7, 16, 17, 18.

Joseph A. Schmidt, Consulting Forester, Box 470, Charleston, South Carolina.
Territory: Southeast.
Specialization: 4, 13, 15, 16, 17. Also growth studies, timber marking.

William R. Schofield, Forest Engineer & licensed Civil Engineer, 681 Market Street, San Francisco 5, California.
Territory: California.
Specialization: 5, 6, 7, 8, 15, 16, 18.

C. D. Schultz & Co., Inc., Foresters and Engineers, Forest Consultants, 946 White-Henry-Stuart Building, Seattle, Washington.
Consultants: C. D. Schultz, R. D. Schultz.
Territory: Arizona, Oregon, Washington, California mainly; but no regional limitations.
Specialization: 2, 3, 4, 6, 8, 10, 11, 15, 16, 17, 18, 20.

C. D. Schultz & Co., Ltd., Foresters and Engineers, Forest Consultants, 325 Howe Street, Vancouver, British Columbia.
Consultants: C. D. Schultz and 16 members of the Canadian Institute of Forestry. Present staff, 80 members.
Territory: No regional limitations.
Specialization: 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 17, 18, 19, 20.

James W. Sewall Company, Consulting Foresters, Old Town, Maine, and Fredericton, New Brunswick, Canada.
Consultants: Frank M. Call, Carleton C. Young, Jr., Theodore C. Tryon (S.A.F. Affiliate Member), Earl W. Raymond Edwin Forsythe.
Territory: Northeast.
Specialization: 3, 4, 5, 8, 13, 15, 16, 17, 18. Also aerial photography.

R. B. Shannon & Associates, Registered Surveying—Consulting Forestry, Colwell-Arnold Building, Kittanning, Pennsylvania; also Indiana, Pennsylvania, and Emporium, Pennsylvania.
Consultants: Robert B. Shannon, Joseph F. Gray.
Territory: Pennsylvania, New York, Ohio, West Virginia.
Specialization: 2, 4, 15, 16, 17, 18. Also timber damage appraisals; construction layout; photogrammetric cartography.

*__James R. Simmons,__ Consulting Forester, 30 Gordon Street, Bel Air, Maryland.
Territory: Eastern states.
Specialization: 2, 3, 4, 10, 15, 16, 17, 18.

William R. Sizemore & Co., Foresters, Surveyors, and Land Managers, Tallassee, Alabama.
Consultants: William R. Sizemore, William T. Ogletree, and Mary H. Sizemore, (S.A.F. Associate Member).
Territory: Alabama.
Specialization: 2, 3, 4, 8, 11, 13, 15, 16, 17, 18.

Albert A. Smith, P. O. Box 644, Crockett, Texas.
Territory: Texas and surrounding states.
Specialization: 1, 3, 4, 5, 6, 7, 13, 16, 17, 18. Also agent for absentee owners. Timber sales and cutting supervision and all phases of forest management.

Samuel S. Snook, P. O. Box 521, Walterboro, South Carolina.
Territory: South Carolina.
Specialization: 4, 15, 16, 17.

Dean Solinsky, Hobart Bldg., San Francisco 4, California.
Territory: California.
Specialization: Timberland appraisals and management.

*__Seymour I. Somberg,__ 415-146 Olympia Bldg., Miami 32, Florida. Phone FRanklin 4-2523.
Territory: Southeastern U. S. and Latin, Central, and South America.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 20. Acquisition and management for investors; forest resource surveys for industry.

Southeastern Foresters, Forest Consultants, Professional Bldg., 224 North 3rd St., Jacksonville Beach, Florida.
Consultants: Nelson B. Blocker, D. Eric Bradshaw.
Territory: Southeastern U. S.
Specialization: 3, 4, 6, 8, 12, 13, 15, 16, 17, 18. Also timber resource investigations; timberland management; timber and land sales; insurance company representative for loans on forest properties.

*__Southern Timber Management Service,__ Home Office, 209½ N. 31st St., Birmingham, Alabama; Branch Offices: 404 Montgomery Ave., Sheffield, Alabama; P. O. Box 964, Auburn, Alabama; P. O. Box 124, Lyons, Georgia; 224 Peach St., McComb, Mississippi; and So. Jackson St., Ext., Brookhaven, Mississippi.
Consultants: J. M. Bradley, W. H. Mullins, H. E. Murphy, C. B. Umland, Dean Lloyd, J. H. Kraemer, Harry S. Larsen, Tom Newman, A. Q. Green, R. E. Church and W. T. Webb.
Territory: South, Central Atlantic and Caribbean.
Specialization: 1, 2, 3, 4, 8, 10, 11, 12, 13, 15, 16, 17, 18, 21. Also acting as timberland investment council and land agent and forester in charge for private, commercial and absentee-owned timberlands of all sizes with optional complete timber stand improvement cutting, milling, and T. S. I. operations as a service under contract. Contracted objectives under long-range management contracts offered. Resource surveys and industrial plant location services.

Frank Spearey, Consulting Forester, Registered Public Surveyor, P. O. Box 1249, Jacksonville, Texas. Branch office, Rusk, Texas, George K. Goldsberry in charge.
Territory: Gulf States.
Specialization: 4, 15, 16, 17. Al phases of land management.

Wallace R. Stacy, Consulting Forester, P. O. Box 21, Walterboro, South Carolina.
Territory: Within 100 miles of Walterboro.
Specialization: 3, 4, 6, 7, 13, 16, 17, 18. Also growth studies, timber marking, fire damage appraisals, forest mapping, timber trespass appraisals, pulpwood and timber sales, timberland agent for absentee timberland owners.

T. J. Starker and Son, 3755 Van Buren Street, Corvallis, Oregon.
Operating consultants: T. J. Starker, Bruce Starker.
Territory: Oregon.
Specialization: 1, 3, 4, 10, 16, 19, 21.

J. F. Stauss, Consulting Forester, 9 Nowlan Road, Hillcrest, Binghamton, New York.
Territory: Northeast and Canada.
Specialization: 2, 3, 4, 8, 10, 11, 13, 15, 16, 17, 18. Also marketing and other forest products; litigation and damage claims.

Fred Stell, Consulting Forester, P.O. Box 42, Glenwood Springs, Colorado.
Territory: Colorado, Wyoming, New Mexico.
Specialization: 4, 6, 9, 14, 15, 16, 17, 18.

Stevens Forestry Service, Consulting Foresters, 701 East Fourth, El Dorado, Arkansas.
Consultants: Irwin E. Stevens, Jim W. Bottoms.
Territory: Arkansas, Louisiana, and east Texas.
Specialization: 1, 3, 4, 11, 13, 15, 16, 17, 18.

Raymond E. Stevens, Consulting Forester, 4416 McCulloch Street, Duluth 4, Minnesota.
Territory: Northern parts of Minnesota, Wisconsin.
Specialization: 4, 15, 16, 17, 18. Also field investigation and forest litigation.

John W. Stock, Consulting Forester and Licensed Land Surveyor, Tupper Lake, New York.
Territory: Adirondack Mountains.
Specialization: 3, 4, 10, 15, 16.

William S. Stover, 6178 Louisville Street, New Orleans 24, Louisiana.
Territory: South, but not limited.
Specialization: Forest resource and related investigations; design and planning of forest inventories, and other studies.

***Edward Stuart, Jr.,** Operating and Consulting Forester, Avalon, Virginia and Hertford, North Carolina.
Territory: Eastern U. S.
Specialization: 2, 3, 4, 10, 11, 13, 14, 15, 16, 17, 18. Also investigations and arbitration of claims; operational management in manufacturing and marketing of forest products.

W. W. Talbert, Forest Consultant, 1112 Union Road, Lufkin, Texas.
Territory: Texas and surrounding states.
Specialization: 4, 6, 16, 17, 18.

***Richard L. Templin, Jr.,** Consulting Logging Engineer and Forester, 1004 N. W. Hawthorne, Grants Pass, Oregon.
Territory: Oregon and northern California.
Specialization: 2, 4, 10, 15, 16, 17.

Tex-La Land Management Service, P. O. Box 354, Kirbyville, Texas.
Consultants: *A. C. Bace, Jr. and George H. Burfiend.
Territory: East Texas and western Louisiana.
Specialization: 3, 4, 5, 6, 7, 11, 13, 16, 17, 18. Also acting as land and forest managers for private, commercial, and absentee-owned timberlands as a service under contract.

Tillinghast & Reed, Consulting Foresters, Madison, West Virginia.
Consultants: *John Tillinghast, *Marvin Reed, R. Joe Johnson.
Territory: West Virginia, eastern Kentucky, western Virginia.
Specialization: 3, 4, 6, 15, 16, 17, 18, 19, 20. Timberlands in coal producing areas a specialty; services available on job basis or on annual retainer fee basis. Also dealers in Homelite chain saws, McCulloch chain saws. Distributors Oregon Saw Chain equipment and Hoffco portable power tools.

Timber Management Service, 821 Spring Street, Klamath Falls, Oregon.
Consultants: *John E. Hall and Robert W. Mezger.
Territory: Ponderosa pine region.
Specialization: 2, 3, 4, 6, 8, 15, 16, 17, 18.

J. M. Tinker, Registered Forester, Statesboro, Georgia.
Territory: Southeastern Georgia.
Specialization: Timber cruising.

Anton J. Tomasek, 1828 Lincoln, Des Plaines, Illinois.
Territory: Illinois, Indiana, Michigan, and Wisconsin.
Specialization. 3, 4, 9, 11, 16, 18. Also tree diseases and insects, forest recreational development.

Tree Farm Management Service, Inc., 1166 7th Avenue West, Eugene, Oregon.
Consultants: *Verne D. Bronson, chief forester; *Lyle H. Seymour, Robert G. Kintigh, John W. Davis, H. N. Cory, Morris J. Anderson.
Territory: Not limited.
Specialization: 2, 3, 4, 5, 6, 7, 8, 9, 13, 15, 16, 17, 18. Complete tree farm management, inventory and special studies of forest lands, salvage harvest supervision, forestry research, aerial photo procurement and interpretation.

Henry H. Tryon, Consulting Forester, retired, 327 Mountain Road, Cornwall-on-Hudson, New York.
Specialization: Sprout hardwoods.

William H. Utley, P. O. Box 645, New Bern, North Carolina.
Territory: North Carolina.
Specialization: 4, 15, 16. Also industrial investigations, tax evaluations—public and private.

John C. Van Camp, Jr., Consulting Forester, 2028 Hawthorne Drive, Rockford 115, Illinois.
Territory: Northern Illinois, southern Wisconsin.
Specialization: 4, 5, 6, 7, 15, 16, 17, 18. Also farm and estate forestry, municipal forestry, Dutch elm disease control programs.

James M. Vardaman & Company, First National Bank Bldg., Laurel, Mississippi.
Consultant: James M. Vardaman.
Territory: Mississippi, southern Alabama, eastern Louisiana.
Specialization: 16, 17. Also own and operate medium-sized tree farm.

Wall and Larson, Foresters, 2508 J Street, Sacramento, California.
Territory: Western states.
Specialization: 2, 3, 4, 6, 7, 8, 10, 11, 15, 16, 17, 18. Also licensed surveying; aerial photo interpretation; land and timber sales and supervision; land valuation and appraisal; log scaling service.

Robert D. Washburn, Forestry Consultant, Route 1, Box 461, Marquette, Michigan.
Territory: Upper Michigan and the Lake states.
Specialization: 2, 4, 10, 15, 16, 17. Also land appraisal. Registered surveyor and registered forester, State of Michigan.

Arthur J. Weinheimer, Consulting Forester, R.F.D. #1, Old Chatham, New York.
Territory: Eastern New York.
Specialization: 4, 18.

Edward H. Werner, Consulting Forest Engineer, 3122 H Street, Sacramento, California.
Territory: California.
Specialization: 3, 4, 10, 16. Also timber and log buyer, logging inspector and personal representative for buyers and sellers of timber and range lands.

Western Timber Services, Arcata Hotel, Arcata, California.
Consultant: Robert E. Kleiner.
Territory: Not restricted.
Specialization: 2, 4, 8, 10, 15, 16, 17, 18.

***J. Atwood Whitman,** Consulting Forester, Glendon, North Carolina. Branch office at Warsaw, North Carolina.
Territory: Eastern and southern United States.
Specialization: 2, 3, 4, 8, 15, 16, 17, 18. Also forest damage appraisal, forest litigation, growth analysis, timber type maps and municipal forestry.

S. A. Wilde, Soils Department, University of Wisconsin, Madison 6, Wisconsin.
Territory: Wisconsin, Minnesota, Michigan, Missouri, Illinois, Indiana, Ohio.
Specialization: 18. Including survey of forest tracts, selection of planting sites, management of forest nursery soils.

Richard E. Wilson, 11½ Fifth Ave., Saratoga Springs, New York.
Territory: Not restricted.
Specialization: 18. Establishment and care of plantations.

S. Leigh Wilson, Consulting Forester, 605 Camellia Circle, Florence, South Carolina.
Specialization: 3, 4, 16, 17, 18.

Paul T. Winslow, Consulting Forester, Staatsburg, Dutchess County, New York.
Territory: Northeast.
Specialization: 1, 3, 4, 11, 15, 16, 17, 18.

K. B. Wood and Associates, Inc., 2623 N.W. Industrial Street, Portland 10, Oregon.
Territory: National.
Specialization: 2, 10, 15, 16, and 17.

Woodland Managers, P. O. Box 542, Lake City, Florida.
Consultants: Philip J. Moses, General Manager, K. R. Swinford, E. W. Gemmer.
Territory: Southeastern United States.
Specialization: Aerial photo interpretation, cruising, damage appraisal, forest management planning, forest maps, growth and yield computations, land surveying, land valuation, tree marking, timber marketing, tree planting, insect problems.

J. E. Woodman, Barnett Bank Building, Jacksonville 2, Florida.
Territory: Eastern United States and Canada.
Specialization: 3, 4, 8, 12, 13, 16, 18.

Herman Work, 1005 Selma Blvd., Staunton, Virginia.
Territory: General.
Specialization: 2, 3, 4, 6, 11, 13, 16. Especially qualified in economics of pulpwood and use of leftovers for pulping.

Robert E. Worthington, Consulting Forester, Quilcene, Washington.
Territory: Olympic Peninsula.
Specialization: 2, 10, 15, 16, 17. Also registered professional engineer and land surveyor.

James G. Yoho, Consulting Forester, Dept. of Forestry, Iowa State College, Ames, Iowa.
Territory: Eastern United States
Specialization: 2, 8, 11, 16, 17. Appointments by mail preferred.

Lawrence W. Zach, Consulting Forester, Route 2, Box 281, Woodburn, Oregon.
Territory. Western Oregon.
Specialization: 4, 15, 16, 17.

E. A. Ziegler, Consulting Forester, College Park, Lewisburg, Pennsylvania.
Territory: Middle Atlantic States and Southeastern States to and including Florida.
Specialization: 2, 3, 4, 6, 8, 12, 13, 15, 16, 17, 18.

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- Southern Timber Management Service

Arkansas
- Paul H. Gerrard
- Pomeroy & McGowin
- Stevens Forestry Service

California
- Charles H. Bunting
- Cal-Pacific
- D. Irving Cobb
- John D. Coffman
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- Emanuel Fritz
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District of Columbia
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Florida
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